MARCH 27, 1961

PAPER TRADE JOURNAL

Fewer Wet End Breaks? Perhaps Higher Take-Off Angle is Answer

Everything Up in '60 But Profits. Survey Lists Who Led the Rest

Materials Handling I: Insight is Needed for Troublesome Pulpwood

A Central Maintenance with Area Supervision. Is This Workable?

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See Page 17

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Week of March 27, 1961
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FEATURED THIS WEEK

Simple Machine Design Changes Could Reduce Couch Breaks

Research indicates that changes in open-draw design so as to provide a large take-off angle at the couch would result in less tension in the sheet thus greatly reducing breaks at the couch—J. G. Campbell **20**

What Methods for Storing and Handling Pulpwood Best Fit Your Mill?

You may want to re-examine your present practices after reading this careful analysis of one of the most difficult of all material handling problems—F. G. Wilson and Curtis E. Green **23**

Excess Capacity and Higher Costs Squeeze Paper Industry Profits

The profit position of many of our leading companies worsened in 1960. However, a few, notably Scott and CZ, showed the way to increased earnings. A comprehensive analysis of the situation is given—John W. Saunders **28**

How the Maintenance System Is Working Out at Charleston

Some of the successes and failures are discussed in the shaking down of the maintenance organization at this West Virginia Pulp and Paper Co. mill—A. W. Allison and C. A. Shoudy **31**

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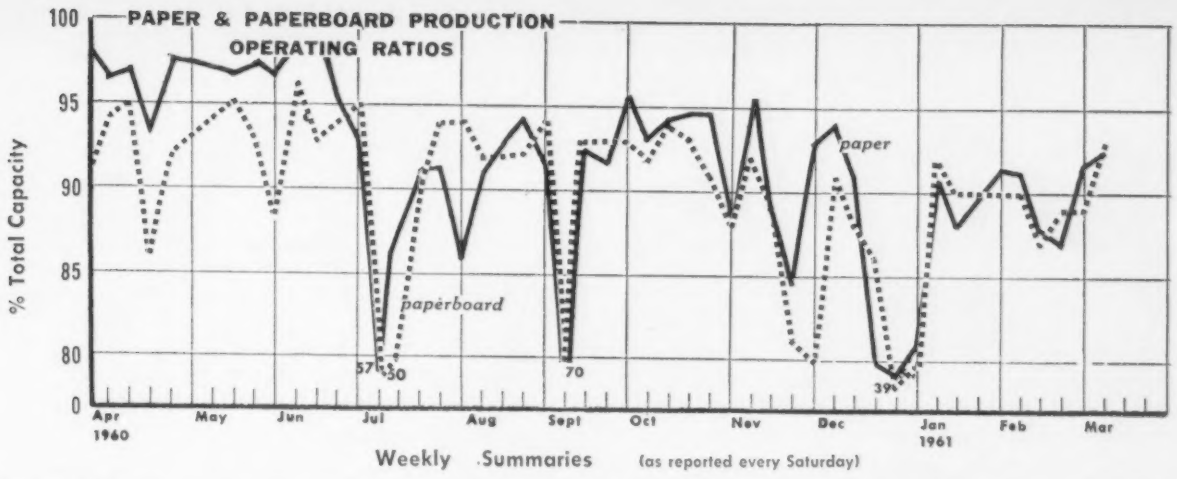

NEWS OF THE WEEK

St. Lawrence Becomes Dominion Tar Subsidiary . . . New Kraft Paper Machine Nears Completion at Tacoma . . . Elk Falls Newsprint Machine Completed . . . Kelly Elected President of Pulp Consumers . . . . . .

St. Regis Announces Managerial Changes . . . Pejepscot Names Asst. Manager—Manufacturing . . . Brown To Retire from Hercules Powder Post . . . Ericsson Retires From Riegel Paper . . . Albemarle Transfers Warren to Richmond

"100 Best Cartons of the Year" Selected . . . New Chattanooga Company To Convert Yarn from Paper . . . Greetings Corp. Promotes Oster . . . Central Ohio Paper Elects Vice President . . . Divisional Aides Named at Wisconsin River . . . .

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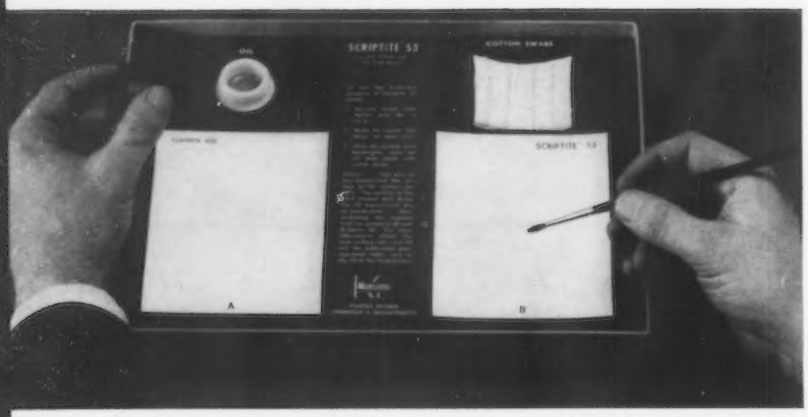
REMEMBER THESE DATES

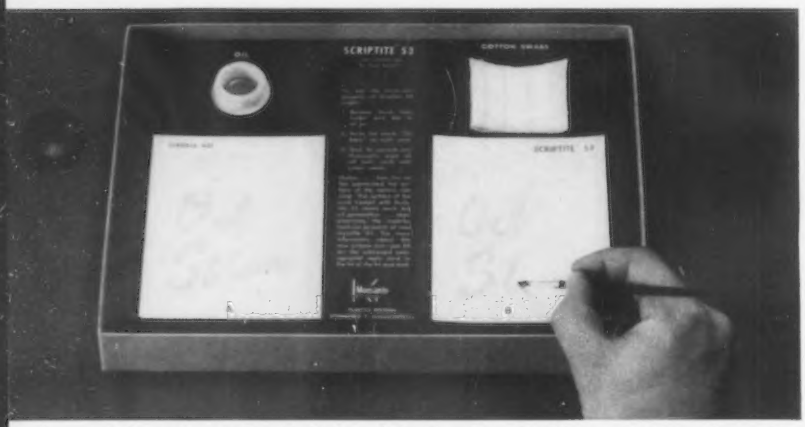
Technical Ass'n of the Pulp and Paper Industry, 12th Annual Coating Conference, Statler-Hilton, Buffalo, N. Y. — MAY 8-10

Paper Industry Management Ass'n National Meeting, Robert Meyer Hotel, Jacksonville, Fla. — JUNE 7-9

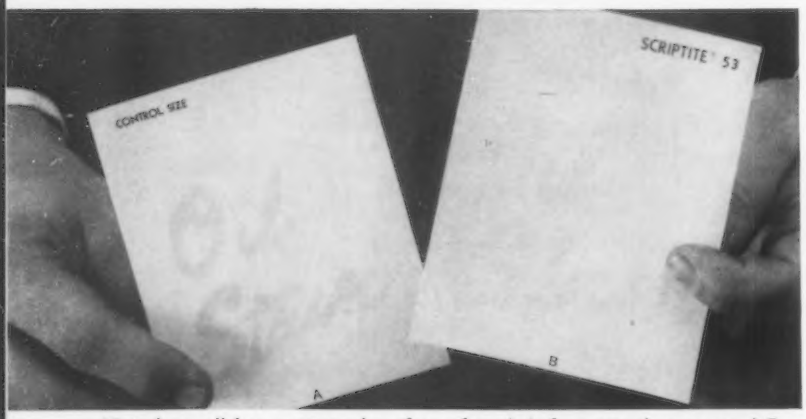
This 30-second test proves the superior hold-out qualities of new SCRIPTITE® 53



Paperboard A has a starch ether surface size. Paperboard B was treated with new Scriptite 53 surface size.



OIL was brushed on both A and B, allowed to dry 30 seconds, then wiped off.



Note how oil has penetrated surface of card A far more than on card B, demonstrating the superior hold-out property of Scriptite 53. You can make this simple test yourself. Ask your Monsanto representative to show you the special Scriptite 53 test kit.

Food board has clearer, brighter appearance when it has been treated with Scriptite 53. This new Monsanto surface size improves wax hold-out on food board and light waxing grades of paper for packaging and laminating. Scriptite 53 keeps the wax coating evenly distributed on the surface of the board, stopping excessive internal penetration of the coating which gives food board a dull greyness.

Scriptite 53 has particular application for milk container and frozen food board because of its excellent lactic acid resistance. It acts as a barrier to the acid even when wax coating has been penetrated, preventing carton bulge. Scriptite 53 is exempt from regulatory provisions of the Food Additives Amendment by virtue of FDA's confirmation of "No reasonable expectation of migration when used as a wax hold-out resin." For additional data on Scriptite 53 or board samples write Monsanto Chemical Company, Plastics Division, Room 811, Springfield 2, Massachusetts.

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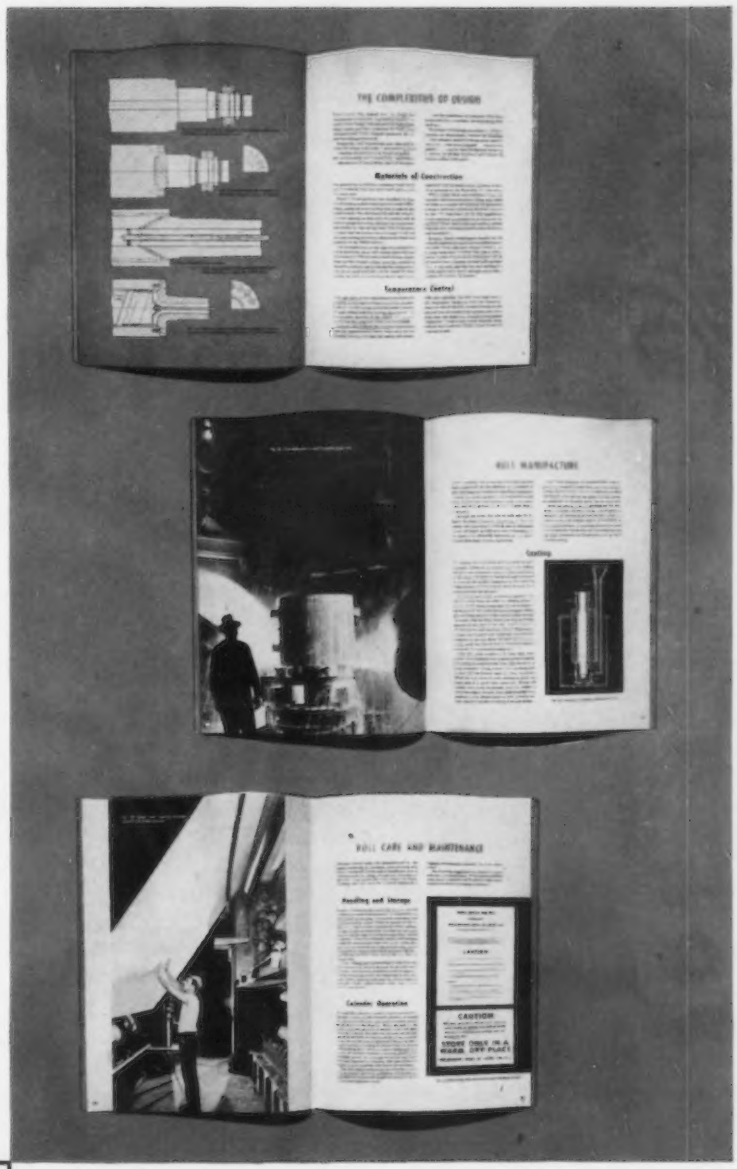

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Courtesy of the Metropolitan Museum of Art

Too late...

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This unknown Egyptian papyrus maker for the Pharaohs made "paper" of bullrushes found on the Nile River's banks. A cross-woven mat of reeds was wetted, pressed, dried and burnished smoother with shells. The result was paper—of a sort.

Upon such surfaces the Egyptians recorded their pictographic hieroglyphics. Thanks to the dry north African climate, the great Harris Papyrus—133 feet long and 16¾ inches wide—remained intact and survives in the British Museum. For the needs of those distant times, such papyrus was "good enough".

Papyrus would rate low on the modern papermaker's quality scale. But Huber filler and coating clays would improve it, if anything could. For these famous quality-controlled clays are used the world over to give many coarse grade pulp papers a quality printing surface, and to give better papers a superlative finish—at lower cost than other coating materials. Viscontrol — a patented Huber process, guards Huber coating clay uniformity.

True, it's over 3000 years too late for Huber clays to help the unknown Egyptian paper maker in our picture. But for you modern live-wire papermakers there's a great deal we *can* do. Write us about your papermaking problems—today.

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Trends

Costs Mount Profits Plummet

The downward trend in earnings for the paper industry continued unabated with nearly 90% of the nation's paper companies showing a worsening profit position in the fourth quarter of 1960, despite a slight increase in sales and production. Meanwhile, capacity and costs are still mounting. However, the paper industry did not fare as badly last year as some other industrial groups. While our industry's aggregate earnings were down 3% from 1959, some others were off 10% or more. Intense competition, low selling prices and rising employment costs are cited as causative factors in the poor profit picture. Expectations are for more of the same in 1961, at least until late in the year. The situation is analyzed, and details presented for leading companies in a special Paper Trade Journal report on page 28.

How Good Is Rayon Tire Cord?

The sale of rayon products is of vital interest to our industry not only as it affects the sale of dissolving pulp directly but also as increased demand for these will take pressure off the world over-capacity for paper market pulp. Therefore, the following highlights of a report by an independent research laboratory presented at the annual meeting of the Textile Research Institute is highly significant. "It would now seem apparent, after rather thorough tests of tires run under normal and severe conditions, that currently popular tire cords—both nylon and Tyrex—maintain their strength integrity almost indefinitely in well designed, quality tires and the idea that they gradually weaken to a point where failure is inevitable should not be given credence. In short, nylon and Tyrex are both very adequate materials for tire cord—perhaps better than had been generally realized."

February News Output Off Because of Short Month

Output of newsprint in North America during February 1961 was 2.3% below that of February 1960 because 1960, being a leap year February of that year, was a 29 day month. However, despite this, newsprint output in the U. S. was at an all time peak for February and was 3.9% above the 29 day month of last year. The Canadian production in February was 4.1% below February 1960. In the first two months of 1961 North American newsprint output was at an all time peak for this period and 0.5% above the level attained in 1960. U. S. output for the two months was 3% more than produced in 1960 while Canadian production was 0.3% below the same period in 1960.

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PAPER TRADE JOURNAL

WEEK OF MARCH 27, 1961

St. Lawrence Corp. Becomes Dominion Tar & Chemical Subsidiary

In response to an offer made on February 13, 1961, Dominion Tar & Chemical Co., Ltd., now owns in excess of 51 per cent of the common shares of St. Lawrence Corp., Ltd., thus making that company a subsidiary of Dominion Tar.

The offer was made on the basis of 11 common shares of Dominion Tar for eight common shares of St. Lawrence Corp. The offer was to expire March 15 but has been extended to April 14.

An offer was also made in February to minority common shareholders of Howard Smith Paper Mills, Ltd., in which Dominion Tar has held a majority interest for some years. This offer on the basis of 2½ Dominion Tar common shares for each Howard Smith common share expires June 13.

New Kraft Paper Machine Nears Completion at Tacoma

Installation of a new 400 ton per day kraft paper machine at St. Regis' Tacoma, Wash., mill is nearly complete with actual production scheduled to start in April. Addition of the machine is part of a $30 million expansion program involving the installation of auxiliary equipment and an addition to the machine room.

The new Beloit machine, named the Western Star, is designed for speeds to 1500 f.p.m., has 68 dryers and includes equipment for the manufacture of extensible paper. Operation of the new machine as well as the existing No. 1 will be under the supervision of Sydney T. Dolan, mill superintendent.

Elk Falls Newsprint Machine Completed

Work has just been completed on the rebuild of No. 1 newsprint machine at Crown Zellerbach's Elk Falls, Canada, pulp and paper mill. No. 1 machine has a 284-inch wide fourdrinier wire, with a 274-inch trim.

Main features of the rebuild were extension of the fourdrinier wire and relocation of some of the auxiliary equipment.

It will provide an improved quality of newsprint and permit speeding up of the machine. Present capacity is 320 tons per day.

The 4½-day interruption for the rebuild was the longest the machine had been down since it went into operation in June 1952 except for a 12-week strike.

Glatfelter Operating New Waste Treatment Plant

After years of research, the P. H. Glatfelter Co. now has a waste treatment plant to provide complete treatment of the mill's waste water. The new $1.5 million facilities will meet the requirements of the clean streams program.

The treatment processes resulting from studies represent improvements over conventional methods.

First, the raw wastes will go to primary clarifiers (tanks) where solids are settled and removed. The clarified waste, still containing the dissolved solids, will then be mixed with activated sludge, which consumes these substances by oxidation.

This process takes place in large concrete-lined basins, where the bacteria are permitted to "eat" (attach themselves to) the pollution to be oxidized. In another smaller basin the bacteria will be permitted to "digest" (oxidize) the pollution.

When the oxidation is completed, the waste goes into final clarifiers in which the pollution-laden bacteria will settle to the bottom, leaving only properly treated water to enter the stream. The bacteria are then pumped from the final clarifiers to be used over again in the process.

Electrically-powered surface aeration turbines, agitate the water in the "eating" and "digesting" basins and by so doing mix with it the tremendous amount of oxygen needed by the bacteria for the process. In this way they also serve to greatly speed up the process. The turbine aerators are of special design, have been patented and are being made available to industry.

This type of surface aeration is one of three new developments especially worked out for the Glatfelter system. The design of the final clarifiers, however, is of a type used elsewhere but not in the same manner. The plant discharges 10,000,000 gallons of water daily, containing from 15 to 25 tons of solids.

Paper and Paperboard Production

The American Paper and Pulp Association reported the ratio of the United States paper production to mill capacity for the week ending March 11, 1961, at 92.4 per cent, compared with 90.8 per cent, revised, for the preceding week. The ratio was 97.6 per cent for the corresponding week a year ago.

The National Paperboard Association reported the paperboard production ratio for the week ending March 11, 1961, at 93 per cent, compared with 89 per cent for the preceding week and 94 per cent for the corresponding week a year ago.

(Detailed Statistics on page 48)

CELGAR, LTD., is sending miniature pulp bales to its prospective customers as its initial bleached kraft sales promotion. The five-pound test samples are being printed and packaged for Celgar in Vancouver. Because Celgar's new mill is the first off tidewater in British Columbia, Celgar has been predicting a new paper pulp with balanced strength properties derived from interior-grown, B. C. species. Officials now report that mill-scale production has lived up to expectations and the Celgar mill will produce one of the finest bleached kraft pulps in North America.

LTI Announces Two-Week Summer Course in Paper

A two-week professional advancement summer course in Paper, Its Properties and Uses will be conducted June 12 to 23 in the Department of Paper Technology at Lowell Technological Institute. The program, similar in scope to last year's successful one, is endorsed by the Boston Paper Trade Ass'n. and the New England Paper Merchants Ass'n.

The course is designed to present in a practical way information about papermaking and the properties of paper in order to determine the value and suitability of paper and paperboard for various end uses. It will be conducted by Prof. Edward M. Engel and Prof. Charles J. Higgins of the LTI faculty, and guest lecturers from industry also will participate.

Enrollment is limited, and applications will be accepted as received. Total cost of the course, including tuition, lodging, meals, books, and transportation on field trips, is $200. Letters of application with a deposit of $10 should be sent before May 10 to Paper Summer Course, Lowell Technological Institute, Lowell, Mass., and further information may be obtained by writing there.

N.A. Newsprint Statistics For February Issued

Production of newsprint in North America during 28-day February 1961 amounted to 675,137 tons and was 2.3 per cent below that in 29-day February 1960. Shipments totalled 636,476 tons in February 1961 and were 2.1 per cent under shipments in the same month of 1960. According to the Newsprint Service Bureau, output in the United States was at an all-time February peak and amounted to 163,208 tons while shipments totalled 167,664 tons, and comparison with February 1960 showed gains of 3.9 per cent and 7.7 per cent, respectively. Canadian production of 511,929 tons was 4.1 per cent below the February 1960 level while shipments of 468,812 tons showed a decrease of 5.3 per cent.

Production of newsprint paper in North America in the first two months of 1961 amounted to an all-time peak for this period of 1,404,886 tons, which was 7,295 tons or 0.5 per cent above the level attained in 1960. Output of United States mills through the end of February 1961 totaled a record 347,531 tons and was 10,976 tons or 3.3 per cent more than the volume produced in 1960. Canadian production amounted to 1,057,355 tons and was 3,681 tons or 0.3 per cent below that in the first two months of 1960.

North American manufacturers' stocks on February 28 1961 totaled 257,974 tons compared with 258,053 tons at the end of February 1960. The continental total was composed of 38,827 tons and 219,147 tons held by the United States and Canadian mills respectively, and inventories were higher than a year ago by 6,822 tons in the former instance and lower by 6,901 tons in the latter.

Kelly Elected President Of Pulp Consumers Ass'n.

Bartow Kelly, vice president and treasurer of Crocker, Burbank & Co., Ass'cn., has been elected president of the Association of Pulp Consumers, Inc., for the coming year. Mr. Kelly succeeds F. R. White, president of Union Mills Paper Mfg. Co., who has served as president of the association for the past two years. The election took place at a meeting of the board of directors held following the annual meeting in New York City.

Other officers elected for the coming year are: E. R. Sutherland, secretary and treasurer of Thilmany Pulp & Paper Co., as vice president; and Reed R. Porter as secretary and treasurer.

At the annual meeting the following men were elected directors for a three-year term, 1961-64: C. H. Eisenmenger, vice president, Sorg Paper Co.; Mace V. Harris, vice president, Northwest Paper Co.; Ross Leonard, director of purchasing, P. H. Glatfelter Co.; E. R. Sutherland, secretary-treasurer, Thilmany Pulp & Paper Co.; F. R. White, president, Union Mills Paper Mfg. Co.

To serve for two years, February 1961 to February 1963 to fill the unexpired term of Charles H. Claypool, resigned: D. T. Quirk, president, Peninsular Paper Co.

In addition to the newly elected directors, the following present directors will continue on the board: D. W. Bergstrom, vice president, Bergstrom Paper Co.; W. E. Daverin, vice president and treasurer, Rising Paper Co.; G. F. Durand, president, Port Huron Sulphite & Paper Co.; Allen F. Horton, president, Curtis Paper Co.; Bartow Kelly, vice president and treasurer, Crocker, Burbank & Co., Ass'cn.; Howard C. Peterson, Jr., Kraft Division, St. Regis Paper Co.; N. A. Seidensticker, president, Chillicothe Paper Co.; Orin R. Summerville, president, Brownville Paper Co.; George R. Wallace, 3rd., president, Fitchburg Paper Co.

PAPER PEOPLE

W. R. Haselton

W. J. Davis

S. K. Pratt

J. M. Lamb

St. Regis Announces Managerial Changes

St. Regis Paper Co. has announced that William R. Haselton, now vice president and general manager of the Rhinelander Paper Co. Division, will succeed Jack M. Lamb as general manager of Tacoma, Washington area operations, when Mr. Lamb retires on June 30. Mr. Lamb will continue as a consultant to the company.

Willmer J. Davis, vice president in charge of sales at Rhinelander, will succeed Dr. Haselton as vice president and general manager. He, in turn, will be succeeded as vice president by Charles C. Johnson, who is now sales manager at Rhinelander.

S. Kepple Pratt, resident manager of the Tacoma pulp and paper mill, will become manager of kraft pulp and paper manufacturing for St. Regis reporting to John A. McDermott, vice president in charge of pulp and paper manufacture. Mr. Pratt will make his headquarters at Jacksonville, Fla.

Robert F. Lynch, now manufacturing superintendent at Tacoma, will become production manager there.

Dr. Haselton joined Rhinelander as technical director in 1953, and served in various manufacturing management posts until 1957, when he was named vice president in charge of operations. He was appointed vice president and general manager in 1958. He received a B.S. degree in chemical engineering from Rensselaer Polytechnic Institute in 1949 and a Ph.D. in chemistry from the Institute of Paper Chemistry in 1953.

Mr. Lamb joined St. Regis at Tacoma in 1928 and was appointed resident manager in 1953, becoming general manager for Tacoma area operations in 1959. A native of Scotland, Mr. Lamb attended engineering school there and Marine Engineering College in Glasgow. He worked in engineering posts in Scotland and later with sugar companies in Hawaii.

Mr. Davis joined Rhinelander in sales in 1948, and served in sales management posts until he was appointed vice president in charge of sales in 1957.

Mr. Pratt joined St. Regis in 1951 at the Jacksonville mill as assistant to the chief engineer. He was transferred to Tacoma in 1956 as general superintendent. In 1959, he was appointed resident manager of the mills. Mr. Pratt is a graduate of the Carnegie Institute of Technology from which he received his B.S. and M.E. degrees.

Pejepscot Names Asst. Manager—Manufacturing

Robert Lampert has assumed the duties of assistant manager of manufacturing at the Pejepscot Paper Co.

Mr. Lampert comes to this area from New Jersey and has worked for the Oxford Paper Co., the Arthur Schoroder Paper Co. and the West Virginia Pulp and Paper Co.

Brown To Retire from Hercules Powder Post

Arthur F. Brown, a member of the board of directors of Hercules Powder Co. and general manager of Hercules' Imperial Color Chemical & Paper Department, will retire April 1. He was elected a director of Hercules on April 1, 1960, and has been general manager of the Imperial Department since the acquisition of the former Imperial Color Chemical & Paper Corp. by Hercules on March 15, 1960.

A resident of Glens Falls, N. Y., he had been president of Imperial since 1953. Prior to that time he had been named executive vice president in 1952, a director of the company in 1928, and general manager of the pigment color division in 1923. He joined Imperial in 1921 as a technical salesman.

Ericsson Retires From Riegel Paper

A. J. Ericsson has retired from Riegel Paper Corp. after 26 years of continuous service. He joined the company in 1935 as a salesman and subsequently held various sales management assignments. For several years prior to retirement, Mr. Ericsson served in product management responsibilities for the company's Specialty Products Division.

Albemarle Transfers Warren to Richmond

William H. Warren has been appointed to the position of employe relations supervisor at the general office of the Albemarle Manufacturing Co. in Richmond, Va.

In this capacity, Mr. Warren will assist the director of industrial relations in the areas of labor relations and employe benefits. His previous assignment with Albemarle was as personnel manager of the Halifax Paper Co. Division in Roanoke Rapids. N. C.

Ray Smith has replaced Mr. Warren as personnel manager of the Halifax Paper Co. He had served since 1955 as assistant personnel manager, in charge of employment. Prior to joining Halifax, Mr. Smith was recreation director for the City of Roanoke Rapids.

Scott Ups Wilkinson; Announces Other Changes

Darcy B. Wilkinson, former regional manager of Scott Paper Co.'s East Coast mills, has been appointed assistant to Paul C. Baldwin, executive vice president.

In his new capacity, Mr. Wilkinson will undertake the direction of special projects, primarily in the area of new products. He has already been assigned responsibility for Dura-Weve and the production of Confidets.

Scott also announced two promotions and eight realignments of duties at the Mobile mill.

Ed Spafford has been promoted from pulp mill foreman to the position of division manager—stock side of the pulp mill. He first joined the company in July 1940 and after several assignments became a foreman in November 1946.

Ben Williams has been promoted from pulp mill foreman to the position of division manager—liquor side of the pulp mill. He also began his career with the company in July 1940 and had a number of job assignments before his promotion to foreman in October 1950.

Frank Semler, Elmore Joyner, Tom Dixon and Clifford Keller have been promoted from assistant foreman to pulp mill foreman on the stock side and will report directly to Mr. Spafford.

Ralph Leonard, T. C. Salter and Henry Thompson, presently pulp mill foremen, will continue as foremen responsible for the liquor side. Tobe Taylor, presently assistant foreman, has been promoted to pulp mill foreman on the liquor side. These men will report to Mr. Williams.

H. L. Evans

Flintkote Names V-P, General Manufacturing

H. L. Evans has been appointed to the newly created position of vice president of general manufacturing, The Flintkote Co., according to I. J. Harvey, Jr., chairman of the board and chief executive officer.

Mr. Evans will assume coordinating responsibility for plant facilities planning and operations and will be concerned with all aspects of manufacturing.

Also a company director he will continue to be headquartered at the Flintkote plant in East Rutherford, N. J.

He formerly was vice president of manufacturing, Flintkote Division. Before that, Mr. Evans was general manufacturing manager. Earlier positions with Flintkote included those of manager and superintendent at the company's Chicago Heights (Ill.) plant. He joined the company as a chemist at the Chicago Heights plant in 1928.

Born in Wisconsin, he attended Ripon College and holds a B.S. in chemistry from the University of Wisconsin.

Research Chemists Join Potlatch Forests Staff

Jerry A. Norbeck and Larry D. Griffin have joined the Potlatch Forests, Inc., pulp and paperboard research staff as research chemists, M. G. Puhlman, technical director for the pulp and paperboard division, announced.

Mr. Norbeck, a graduate of the University of Idaho in chemical engineering, was employed by the Anaconda Co. three years prior to his employment with PFI. Mr. Griffin was graduated in February from San Diego State College in California with a bachelor's degree in chemistry.

Gilman Paper Makes Sales Appointments

Gilman Paper Co., manufacturer and converter, with plants at Gilman, Vt., and St. Marys, Ga., has announced three sales appointments.

To the Pennsylvania-Maryland-Washington-Delaware area—E. M. Kienlen, formerly with the Sayford Corp. of Litchfield, Conn., will represent Gilman's Standard Products Division, reporting to William Peist, sales manager, in New York. He will make his headquarters in Philadelphia. William P. Richards, who has more than 20 years of sales experience in the paper trade, recently with Paper Products Mfg. Co., of Swarthmore, Pa., will represent Gilman's Specialty Papers Division, reporting to Robert Bringman, sales manager, in New York. Mr. Richards will also headquarter in Philadelphia.

In the Ohio-Indiana,Kentucky-Tennessee - W. Virginia area — Mel Grischy, recently with the sales department of Fox Paper Co., Lockland, Ohio, will handle sales of both Standard Products and Specialty Papers Divisions from his headquarters in Cincinnati, Ohio. He will report to Jack Ritter, Gilman's Western sales manager, at the company's Chicago office.

Duryea Goes to Turkey On ICA Project

William D. Duryea, a retired vice president of Penobscot Chemical Fibre Co. and a present member of the board of directors and executive committee, has left for Ankara, Turkey, to work on a project for the ICA to study Turkish industrial enterprises. This work is being performed by the J. G. White Engineering Co. of New York City. Mr. Duryea will be handling the pulp and paper segment and will remain in Turkey for three months.

Cons. WP&P Adds Bennett To Research Staff

Henry W. Bennett has joined the Research & Development staff of Consolidated Water Power & Paper Co. He will serve as a research supervisor in the field of papermaking.

Mr. Bennett comes to the company with over 10 years of technical and research experience in the paper industry. He received a master's degree from Pennsylvania State University in 1949. Since 1958 he has served as technical supervisor for Riverside Paper Co.

BIRD CYCLEAN USERS cite five major advantages of cycleaning their pulp and paper stocks

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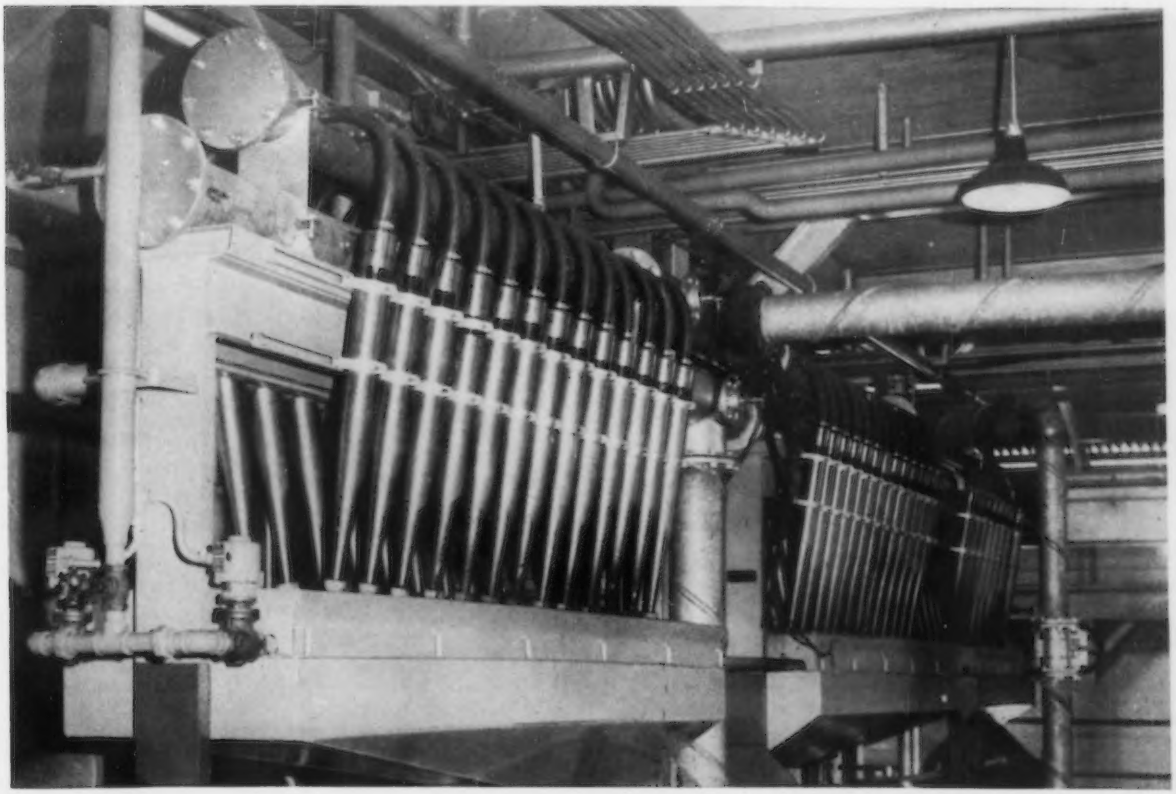
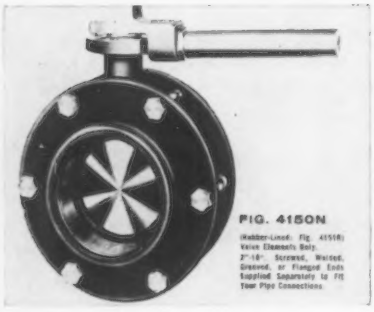


NEW EQUIPMENT & SUPPLIES



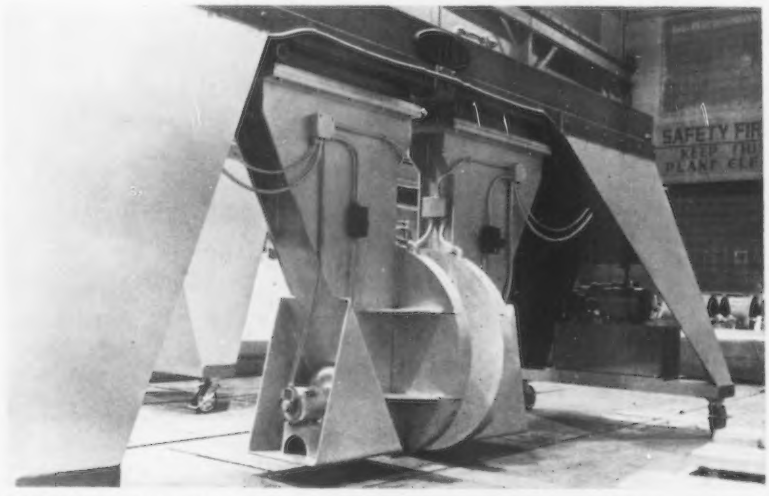
Butterfly Valves Available in Variety of Materials

A line of butterfly valves is announced by the Lunkenheimer Co. The valves are rated at 150 pounds water pressure and cover a pipe size range from two to 18 inches.

Lunkenheimer's butterfly valves have nickel-plated cast iron or cast steel bodies with stainless steel trim. For special applications, a variety of alternates is available on many of the figures, including rubber or ceramic lining, monel trim, and aluminum-bronze discs. "O" ring seals provide positive closure in vacuum or pressure service. They require no lubrication. In lever operation, they open or close in a quarter turn. Gear operation is optional in large sizes.

In diameters up to six inches, the valve may be obtained as an integral unit. In the full range of sizes, up to 18 inches, the valve is a separate element with interchangeable bolt-on flanges for screw, weld, flange, or groove installations.

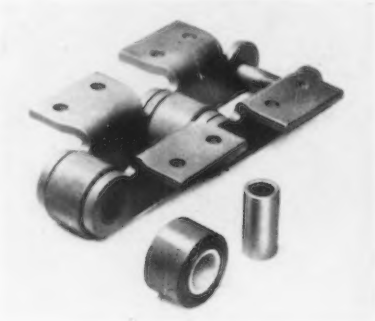
Lunkenheimer officials point out that the butterfly valves are desirable in new installations because their compact design and light weight eliminate the need for additional line bracing. As a replacement, the flange end butterfly valve will fit exactly horizontal space occupied by comparably-rated gate valves. Vertical dimensions are one-half less than many gate valves. Lunkenheimer Co., Cincinnati, Ohio.



PORTABLE HYDRAULIC ROLL HEADER is a self-contained unit capable of being moved by manpower. This unit can supply pressures up to 10,000 lbs. per platen by enclosed hydraulic cylinders. All controls are mounted on the side of the header frame where the operator has a clear view of the operation. Headers obtainable range in size from 42 inch diameter platens to 73 inch diameter and the platens can be unheated, steam or electrically heated. The electric heated platens have a controlled temperature range of 50°-250°. The length between the platens differs depending on the customer's requirements. Valley Iron Works Corp., Appleton, Wis., a subsidiary of Allis-Chalmers Mfg. Co.

Conveyor Chains Have Delrin-Bushed Rollers

Chain Belt Co. announces the availability of its Chabelco steel conveyor chains with Delrin-bushed rollers and stainless steel bushings. The added design feature will aid the Chabelco line in far outperforming



the firm's plain all-steel chains that are said to be already increasing wear life over cast chains at a 2 to 1 ratio.

Delrin, a product of E. I. du Pont, is highly resistant to moisture and retains its strength and size when wet. It resists corrosion better than stainless steel and has a low coefficient of friction.

Delrin-bushed rollers need little or no lubrication. In addition, they operate quietly and can be continuously cleaned with water at temperatures up to 180°F. They can also be steam cleaned when necessary.

Chain Belt is producing a full range of Chabelco conveyor chains with the rollers, ranging from 3.000 to 6.000 pitch. Chain Belt Co., Milwaukee 1, Wis.

Silicone Controlled Release Additives, Coatings Added to Line

Two controlled release silicone additives, the first said to be available to industry on a commercial basis, are among seven new silicone products for the paper industry which have been put on the market by the Silicone Products Department of General Electric.

The controlled release additives, SS-4023 and SS-4025, make it possible to commercially produce silicone coated paper with the specific degree of release desired. By using these materials in conjunction with General Electric silicone release coatings SS-4001 and SS-4026, it is possible to achieve controlled release, particularly as required in the manufacture of pressure sensitive tapes

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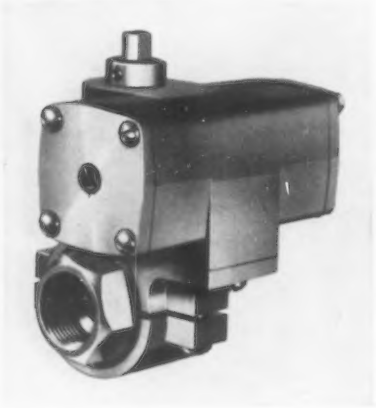
and labels. By proper application, release coatings are obtained which provide stable-controlled release for extended periods of time.

The silicone release agents are identified as SM-2016, a fast curing silicone emulsion for industrial applications such as asphalt packaging; SM-2026, a silicone emulsion for use in food-grade applications; SS-4026, a silicone solution which provides improved anchorage to the sheet; SS-4034, a non-inflammable silicone solution for use where flammability is a problem; and DF-1040, a 100 per cent silicone fluid for food-grade application.

These silicone release agents impart release properties as well as water repellency to paper and paper products and are designed to supplement G-E's existing products SM-2013 and SS-4001. Silicone Products Dept., General Electric Co., Waterford, N. Y.

Pneumatic Operators for Remote Actuation Ball Valves

A line of air-powered operators provides automatic or pushbutton remote control of Hills-McCanna ball valves. Vertically mounted type operators for valves from ¼ through 8 inch sizes are totally enclosed to protect all moving parts from the atmosphere. When a series of automated valves are mounted side by



side, this type of operator permits closer spacing.

Horizontally mounted cylinder-and-lever type operators are available for all valves from 3 through 8 inch sizes. Their over-all height is less so that they will fit more conveniently where overhead is restricted.

Both types of operators are sold integral with the valves or separately for installation on valves already in service. Optional accessories include a solenoid valve for electrical control, limit switch for remote on/off indication, and a fail-safe device to return the valve to open or closed position in event of air system failure. Other types of operators are available for Hills-McCanna 10 and 12 inch ball valves. Hills-McCanna Co., 4600 West Touhy Ave., Chicago 46.

MOTORIZED SPEED VARIATOR nearly the same size as a constant speed motor of the same capacity, has pancake style motor mounted on one side of the frame. Motors are of radial air gap design, conforming to NEMA Standard "B", available in 1/3 to 15 h.p. Infinite variations in speed over a range of 9:1 are possible by varying the circumference of contact paths on the input and output side of balls. The ball axes are tilted by a cam-slotted iris plate in mesh with a control worm. A mechanism located between the shafts and their splined drive discs gives constant torque. Worm & Gear Div., Eaton Mfg. Co., Cleveland, Ohio.

Three Coating Resins Being Introduced

Monsanto Chemical Co., Plastics Division, Springfield, Mass. has introduced a melamine resin designed to impart water resistance to coatings for offset printing paper made on high-speed machinery, in addition to two polyethylene resins for extrusion coating and laminating paper and board at high speeds and low temperatures.

Field and laboratory evaluations of the extrusion coating resins, designated MPE 70 and MPE 72, show that their melt indices and densities provide the best balance between adhesion, heat seal range, neckdown and drawdown. MPE 70, which has been extended to six pounds a ream (less than ½ mil), is said to be particularly suited for low temperature extrusion, which permits greater control of extrusion odor and heat seal degradation. MPE 72, is used successfully for coatings and laminations of ¼ mil and less. It is designed to offer adhesion and heat seal properties with acceptable neckdown on high-speed coating operations. Major uses for these resins will be in flexible packaging for food products, particularly in single service convenience packaging.

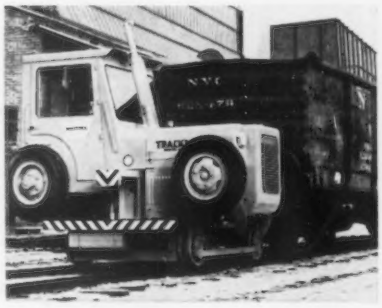
The third product, tradenamed Scriptite 31, is a colorless water solution of methylated methylol melamine resin. It is said to be suited for high solids coatings, where increases in viscosities cannot be tolerated.

Added to the binder system for pigment coating formulations, Scriptite 31 links with the protein or latex base to form a water-impervious coating. The amounts to be used will depend on the drying time and temperature and the degree of wet-rub desired.

Scriptite 31 is freely soluble in water to any degree of concentration and is compatible with all ingredients and conditions normally used in pigment coating paper. It is available in 55-gallon non-returnable drums or in 5-gallon non-returnable cans.

Utility Rail and Road Vehicle Now Diesel-Powered

Trackmobile, Whiting Corp.'s utility rail and road vehicle, has recently been made available with a diesel



engine. A four-cylinder, four-cycle valve-in-head engine rated at 105 h.p. at 2500 r.p.m. and manufactured by Cummins Engine Co., Inc., was selected to power the model.

Three gasoline-powered Trackmobile models are also manufactured by Whiting Corp. All models have rubber-tired road wheels which are hydraulically raised and lowered so that road and rail convertibility is quickly and easily accomplished. Consequently, Trackmobiles are able to pull heavily loaded rail cars into a blind stop, then by lowering the road wheels, roll across the tracks to the next job. Whiting Corp., Harvey, Ill.

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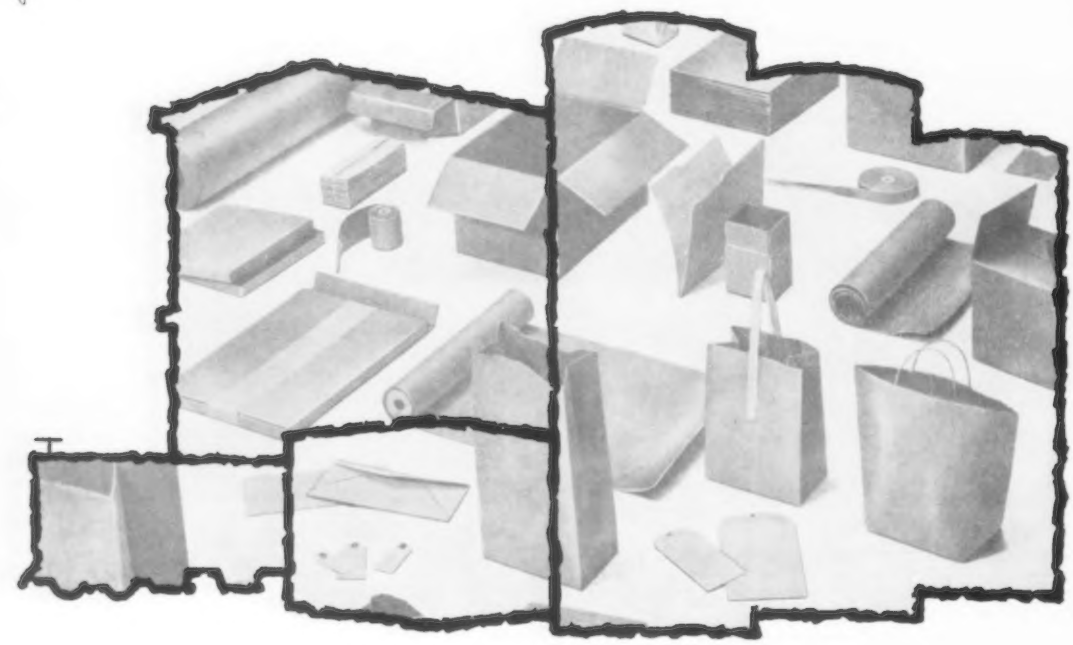

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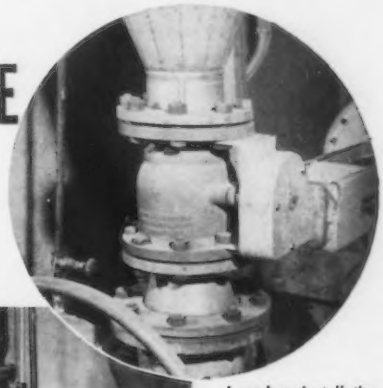
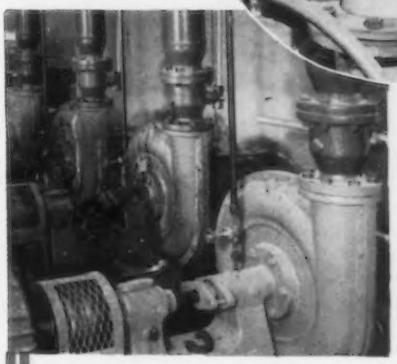


Jamesbury installation at Weyerhaeuser Longview Plant



Jamesbury installation at Mead Corporation Chillicothe Plant

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Specially prepared at our request, this Australian expert sums up development and progress on this subject to date.

Simple Machine Design Changes Could Reduce Couch Breaks

Research indicates that changes in open-draw design so as to provide a large take-off angle at the couch would result in less tension in the sheet thus greatly reducing breaks at the couch.

J. G. Campbell,
Senior Research Physicist,
Australian Paper Manufacturers, Ltd.

Research work on sheet takeoff in open-draw machines, published over the last three years, has led to the suggestion that wet-end breaks could be greatly reduced by simple changes in machine design. In conventional machines, the sheet is drawn off the couch at a rather low angle (e.g. $\Phi = 30°$ in Figure 1a). The suggestion is that this angle be increased to more than 90° (e.g. $\Phi = 120°$ in Figure 1b). Two advantages would result:

1. Less tension would be needed at the same speed (or the same tension at higher speed), and
2. Sticky spots would be much less likely to break the sheet.

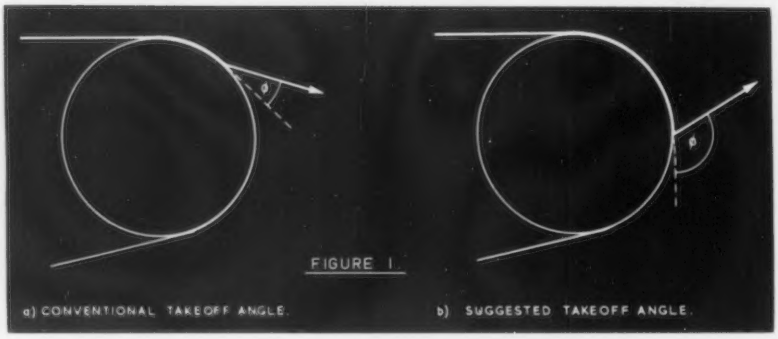

FIGURE 1

Take-off from Uniform Surface

Following earlier unsuccessful attempts, the subject of open-draw takeoff was put on a firm scientific basis in 1958 when Mardon, Truman, O'Blenes and Meadley **(1)** published the formula

$$S = \frac{W}{1 - \cos \Phi} + m V^2$$

where S is the sheet tension per unit width,
W is the work done in peeling unit area,
Φ is the takeoff angle shown in Figure 1,
m is the mass of the sheet per unit area, and
V is the sheet speed.

Thus the tension was shown to consist of two components, which can be considered separately. The first term, which is the tension needed to peel the sheet even at slow speeds **(2)**, is strongly dependent on angle. The second term, due to inertia, is independent of the path of the sheet but strongly dependent on its speed.

If W were constant, then the first term $\frac{W}{1 - \cos \Phi}$, when plotted against Φ, would drop sharply from infinity at $\Phi = 0$ down to W at $\Phi = 90°$, and continue to drop more slowly to $\frac{1}{2}W$ at $\Phi = 180°$. However, laboratory experiments by Mardon and his colleagues in Canada **(3, 4, 7)** and by Radvan and O'Blenes in England **(5)** have shown that W increases considerably as Φ approaches 180°. The result is that the term $\frac{W}{1 - \cos \Phi}$ drops from infinity at $\Phi = 0$ to a broad minimum in the region between 100° and 150°, and then rises again as Φ approaches 180°. This behaviour is shown in the upper curve of Figure 2.

The second term is represented by the lower full line in Figure 2, where the distance below the origin is mV^2. The distance between the two full lines then represents the tension S, the sum of the two terms.

The first advantage of a larger take-off angle can now be seen. The full arrow in Figure 2 shows the total tension for a typical case with takeoff at 30°. If the takeoff were moved to 120°, the tension needed would be substantially reduced. Alternatively, the machine speed could be increased until the same sheet tension is reached (dashed line and arrow). Therefore the two terms in the equation interact in such a way that by increasing the angle more tension becomes available to enable speed to be increased.

There is one puzzling feature of an open-draw couch which was satisfactorily explained for the first time by Radvan and O'Blenes (5) on the basis of this curve. Many papermakers have found that if they allow the line of separation to move down the couch roll until the takeoff angle exceeds 90°, the whole sheet suddenly dives into the hog pit. Radvan and O'Blenes pointed out that stable takeoff cannot be achieved on a rising portion of the curve.

Consider what happens when, for any reason, the rate of peeling slows a little, and the line of separation moves a small distance down the couch roll, increasing the angle Φ. If this occurs on the falling part of the curve, there will be an excess of tension over what is needed to maintain the peeling at machine speed; this will peel the sheet a little faster and move the line of separation back towards its original position. The falling part of the curve is therefore a stable region. If this occurs on the rising part of the curve, however, there will be a deficiency of tension, so that the peeling will become slower still, increasing the deficiency until the sheet goes into the pit. Therefore the rising part of the curve is an unstable region.

Self-Healing Breaks

In their studies of takeoff at high angles, Radvan and O'Blenes also made the remarkable discovery that incipient breaks due to spot adhesion can become self-healing. In normal open-draw operation, if a small patch sticks to the couch or press and is torn out of the sheet, it initiates a pair of tears which run outward in a fishtail until the whole sheet is broken. These investigators found that, if the takeoff angle is increased, the tears run outward more slowly, until at angles exceeding 90° the direction can reverse and the tears run together. Then the incipient break heals itself, and the sticky spot leaves only a small hole in the sheet. The breaks did not become self-healing on all machines tested, for reasons not yet fully understood, but in every case the outward spread of the tears became slower as the takeoff angle increased to more than 90°.

On other occasions, a sticky spot did not start any tear, but was plucked out of the web, leaving only a thin spot in an intact sheet. This effect, known as "skinning", was also found to occur much more often when the takeoff angle exceeded 90°.

A film is available from the Wiggins Teape Research Organization (6) which vividly shows these affects on two slow-running machines. Similar films have been exhibited by Mardon, Meadley, Duchesne and Howe (7), who confirmed their existence on newsprint machines at speeds up to 1800 ft./min., and established that breaks are most likely to become self-healing when the takeoff angle is between 120° and 140°. The chance of skinning without tearing was found to increase with increasing takeoff angle throughout the range. These two effects together comprise the second advantage of larger takeoff angle.

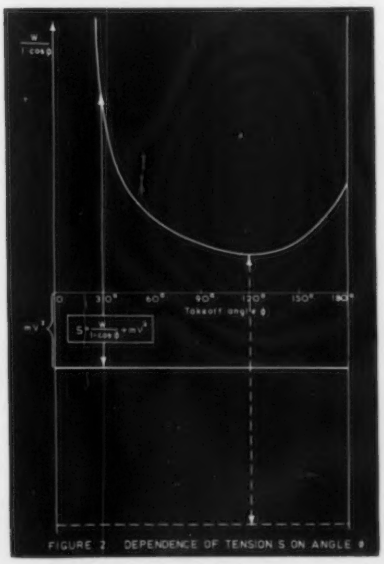

FIGURE 2. DEPENDENCE OF TENSION S ON ANGLE φ

Effect of Suction Box in Couch

So far we have considered the takeoff to be from a uniform surface, all parts of which have the same adhesion properties. In a suction couch, however, there is a region just past the sealing strip where the sheet is loosened by a layer of water collecting momentarily between sheet and wire. This action has been described by Hendry (8) and Baggallay (9).

The effect of this has been represented by Campbell (10) as a sharp dip in the curve of W against Φ, giving a similar dip in the tension-angle curve as shown in the full upper curve of Figure 3. This dip causes two effects. On the steeply downward-sloping side, the angle changes very little for a considerable range of tension, so that the line of separation is held within narrow limits, and this is the correct operating range of the couch. On the upward-sloping side, the conditions are unstable for the reasons given above and so, if the tension is reduced below the lower end of the operating range (point A in Figure 3) the line of separation must move down abruptly until the descending curve is reached again further round the couch roll, at about point B.

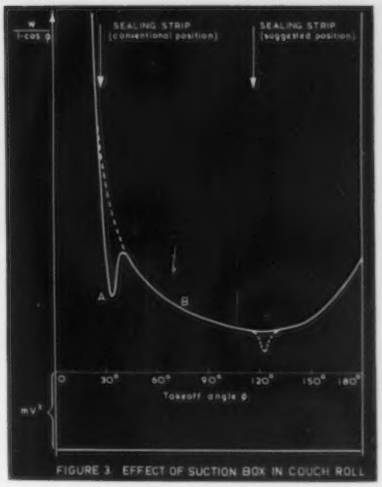

FIGURE 3. EFFECT OF SUCTION BOX IN COUCH ROLL

In order to run the couch at a large takeoff angle as suggested, it is only necessary to adjust the position of the suction box inside the couch roll, in relation to the lead-in to the first press, until the dip due to the sealing strip falls in the region of minimum tension, as shown dashed in Figure 3.

It would even be possible to move it so far round the roll that the couch is running with a takeoff angle in the rising portion of the curve approaching 180°, because the sharp dip due to the sealing strip would provide stability by holding the line of separation on its steep downward slope. There would be no advantage in going further round than the region of minimum tension, but it is important to note that even if the sealing strip were situated unintentionally on the rising part of the curve, the couch could still operate in a stable fashion without the instability noted by Radvan and O'Blenes.

Tardif (11) has discussed the practical consequences of this, and pointed out one essential condition for successful operation at minimum tension: the machine conditions must be steady enough to keep the line of separation within the operating range. If the sealing strip is in its conventional position, shown in Figure 3, then quite wide fluctuations in tension can be tolerated within the operating range. With the sealing strip in its suggested position, however, the fluctuations in tension which could be tolerated are propor-

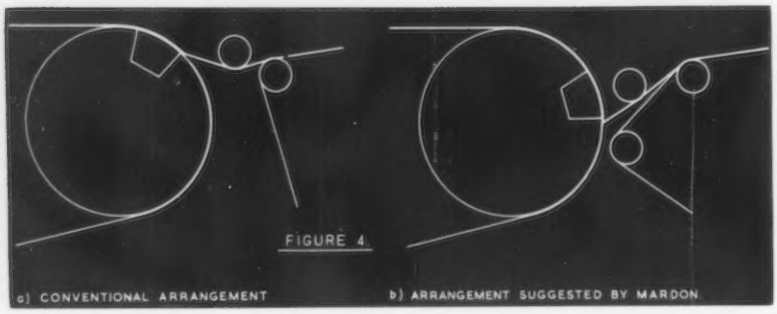

FIGURE 4.

tionately much smaller. Therefore only machines with a steady drive, forming an even sheet, will be able to derive the full benefit from increased takeoff angle.

Machine Design

Why is it that paper machines are run today with such low values of takeoff angle? Mardon (12) answers this by saying that we have inherited, from the old days of top couch rolls, a certain machine geometry. With this relationship between the couch and the first press, it is impossible when threading the machine to blow the tail over to the first press felt unless the couch box is set well back, giving a small takeoff angle.

The conventional arrangement is shown in Figure 4a. Mardon suggests a simple rearrangement of the felt run leading to the first press, shown in Figure 4b. The tail roll of the felt is replaced by two rolls with an inclined section between them, on which the tail can be picked up smoothly.

While the main concern of the investigators has been the couch, the same principles can be applied on an open-draw press, so as to minimize breaks due to sticky spots, provided that the rising part of the tension-angle curve is avoided. However, here again some modification may be required. When the draw is slackened on a normal press, and the line of separation allowed to run up the top roll, there is creasing trouble due to the greater distance over which the slack sheet is unsupported. This could perhaps be overcome by a holding-down roll, to bring down the line of separation closer to the felt while maintaining high takeoff angle.

It now remains for these or similar suggestions to be put into practice, so that the industry can reap the benefits of large-angle takeoff which this research predicts.

REFERENCES

1. Mardon, J., Truman, A. B., O'Blenes, G., and Meadley, K., — **Pulp and Paper Magazine of Canada** 59 (9), 135 (1958).

2. Toshio Hata — Chemistry of High Polymers (Japan) 4, 67 (1947), quoted in **Chemical Abstracts** 45, 2712d (1951).

3. Mardon, J., — Paper presented in Leningrad, May 4, 1959. Abridged translation in **Bumazhnaya Promyshlennost'** 35 (2), 9 (1960).

4. Mardon, J., and Bourassa, G., — quoted in **Paper Trade Journal** 143 (52), 23 (December 28, 1959).

6. **Paper Technology** 1, 117 (1960).

5. Radvan, B., and O'Blenes, G.— **Tappi** 42, 921 (1959).

7. Mardon, J., Meadley, C. K., Duchesne, J. P., and Howe, B. I., — **Pulp and Paper Magazine of Canada** 61, T-341 (1960).

8. Hendry, I. F., — **Tappi** 38 (9), 163A (1955).

9. Baggallay, M. B., — **Pulp and Paper Magazine of Canada** 56 (9), 131 (1955).

10. Campbell, J. G., — **APPITA** 14, 32 (1960).

11. Tardif, J. W., — **APPITA** 14, 38 (1960).

12. Mardon, J., — The Reason for and Function of Chemical Pulp in a Newsprint Furnish, **Pulp and Paper Magazine of Canada** 61, No. 11. T529, Nov., 1960.

LP-Powered Lift Trucks Provide Short Cut for Three Mills

Three major paper mills have found a mobile short cut to greater operating efficiency for handling everything from paper rolls to cord wood. They use fleets of versatile liquefied petroleum gas fork lift trucks.

Thilmany Pulp & Paper Co. of Kaukauna, Wis., operates a fleet of 36 LP-gas lift trucks. West Virginia Pulp and Paper Co. of Covington, Va., runs 24 pieces of LP-gas powered equipment, and the Watervliet Paper Co. of Watervliet, Mich., has six lift trucks.

Thilmany uses LP-gas fork trucks, roll grabs, up-enders and bucket types for a variety of chores from transporting 50-pound bales of bags to hoisting three-ton paper rolls. According to W. C. Hess, superintendent of transportation, the firm converted its fleet to LP-gas seven years ago to protect drivers from harmful carbon monoxide exhaust fumes while loading and unloading railway cars and to boost economy. Despite their 24-hours use, seven days a week, Mr. Hess said the trucks engines are overhauled only about once every two years. He attributes the longer engine life to the fact LP-gas is clean burning and doesn't produce engine sludge. As a result, crank-case oil stays cleaner and "is a better lubricant to protect the engine from wear."

LP-gas, carried on the trucks as a liquid under slight pressure becomes a pure, dry vapor when released from the fuel tank. It mixes thoroughly with air as it enters the carburetor. The closed fuel system on LP-gas lift trucks prevents entry of dirt to wear internal engine parts.

Westvaco has found LP-gas lift trucks essential for hoisting wood from incoming trucks onto special log-hauling railway cars at its 11 wood-buying yards throughout West Virginia. Sam Woodson, manager of the firm's Kelly Pulpwood Yard, near Lynchburg, said that "after operating one truck the equivalent of 100,000 miles, we found no evidence of engine wear. We have practically no 'down time' for maintenance, except to replace spark plugs once a year."

Mr. Woodson added that LP-gas (over 100 octane) provides abundant power for the truck's engine, which develops 82 horsepower at 2800 r.p.m. It is operated during an eight-hour shift on about 16 gallons of LP-gas.

Watervliet in addition to six LP-gas lift trucks used for inside material handling, operates a special LP-gas boom truck for transporting pulp wood. The machine, with twin claws that clamp around the logs, is capable of lifting a 6,000-pound load. Plant engineer, E. B. Spreen, said LP-gas is "cheaper . . . cleaner. There are no fumes and no carbon deposits to foul the engine."

Material Handling — 1

What Methods for Storing and Handling Pulpwood Best Fit Your Mill?

You may want to re-examine your present practices after reading this careful analysis of one of the most difficult of all material handling problems.

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Of the many operations involved in the manufacture of pulp and paper from wood, probably the one most likely to win an unpopularity contest at any mill is the storage and handling of pulp wood at the mill site.

Of all the raw materials handled in large quantities in industry, pulpwood logs are one of the most troublesome. Unlike grain, coal, sand, gravel, and other materials, which will flow to a greater or lesser extent, pulpwood cannot be handled in the usual conveyors designed for bulk materials. The discrete units are too large for this. On the other hand, the individual pulpwood log varies considerably in size and shape and also in density. In addition, pulpwood must be handled in such quantities that aside from the aforementioned peculiarities the required rate of handling precludes the use of package systems employed in handling uniform objects such as bags, barrels, drums, etc.

Types of Equipment

Having certain limits within which the normal variations in size fall, pulpwood may be stacked or racked but only by hand and with some difficulty. Because of the size of the individual logs any attempt to handle pulpwood in bulk in continuous conveyors requires very large and extremely rugged equipment and even the best of this equipment is subject to great abuse which results in very high maintenance costs. Many types of equipment and many system arrangements have been tried and are now in use to handle pulpwood, but the problem remains essentially the same and none of the equipment now in use is basically new. A brief resume of the various major types of equipment in use today with comments on the principal characteristics of each seems to be in order, and accordingly follows:

1. TRAVELING CRANES

The traveling crane is the basic tool of most woodyards. It is usually of the track or crawler type, but rubber-tired and locomotive type cranes are also in use to a lesser degree. A few yards are using gantry cranes of different types, usually because of a situation peculiar to the mill. The gantry crane is obviously less flexible and also more expensive than the crawler type, but has the advantage if properly designed of lower routine maintenance. For unloading, storing, and recovering pulpwood the so-called "orange-peel" grapple is most popular. This grapple is used in a range of sizes from ⅜ths cord up to 1½ cords, and is suitable for "jackstraw" storing only. For unloading racked wood and placing in storage in the same condition, the parallel grab is used. For unloading trucks, and in some cases, rack type railway cars, cable slings are used with the crane. Several mills have used and are using a homemade pulpwood rake for unloading rack cars to flume or conveyor, this rake consisting of a flat metal plate slung from the crane boom and controlled by cables from the drums on the crane. This is an inexpensive but less satisfactory substitute for the pulpwood rake described below.

As is the case with all woodyard equipment, the purchase of cranes on price alone is poor economy since light equipment simply will not stand up and excessive maintenance costs soon eat up any saving in capital expenditure.

2. PULPWOOD RAKES

The pulpwood rake is one of the newer members of the woodyard equipment family. It is now manufactured as a standard piece of equipment in two major varieties. The most popular is a modification of the back hoe attachment mounted on a standard crane cab and chassis. In place of the back hoe scoop a flat plate is used to rake pulpwood from rack cars to conveyor or flume. As in the case of the back hoe the operation is by means of cables and drums. A skilled operator using this device can unload a 20-cord rack car in as little as five minutes except for the final clean up. The other variety of this device is a modification of a versatile excavation machine completely hydraulic in operation in which the scoop is replaced by the flat plate. The initial cost of this machine is somewhat greater than that of the back hoe variety, but it is becoming increasingly popular.

3. CABLE CONVEYORS

The cable conveyor is a very old device and is still in common use in Canada, in the Western United States, and the New England States. A few are in use in the Middle Atlantic States. It has found very little use in the Southeast since large woodyard installations in this area are relatively recent, and more modern equipment is used.

The cable conveyor is simple, inex-

pensive to construct, and if properly designed and installed can handle a large quantity of wood with fairly low maintenance. The fact that its popularity is decreasing is not necessarily a reflection on its usefulness, but rather indicates a growing preference for less bulky components in equipment of this type. The head, tail and idler sprockets of cable conveyors are necessarily very large and heavy and the maintenance of the cable and buttons requires special techniques and experience not always available today in mill maintenance departments. A characteristic feature of the cable conveyor is that it is most economical on very long runs and the tendency toward smaller storage capacities and hence shorter conveyors may have something to do with the decrease in popularity of this type of conveyor.

4. CHAIN CONVEYORS

Chain conveyors are universally in use and just as universally condemned for their high maintenance cost. This is not a basic characteristic of the type of conveyor, but is the result of the heavy abuse to which it is subject in woodyard work. Heavy loads, constant pounding, and in many cases underdesign for the service result in constantly needed repairs. There are certain operations in pulpwood conveying at the mill, however, which can be performed by no other piece of equipment. Other operations can be done in other ways, but the chain conveyor is an adequate substitute for other means. In the former category, we have the jack ladder or chain conveyor used to carry pulpwood from a flume or pond. In the latter category we have barking drum discharge conveyors, multiple chain log sorting conveyors, etc. Long chain conveyors are used as receiving conveyors in recovering wood from storage and in unloading wood from cars, trucks, and in a few instances, barges. Such conveyors must use chains of high tensile capacity, running in very rugged troughs, usually of heavy steel construction, and powered by motors and power transfer equipment capable of absorbing the many shocks and rapid variations in load encountered in this service. The conveyor profile must be carefully designed to avoid lifting of the chain on start-up when loaded. In spite of all ordinary precautions in design and operation, maintenance on the yard conveyor is likely to be quite high. A necessary part of the yard conveyor trough is the loading apron which receives wood from car or grapple and is subject to constant pounding by falling logs. The sturdiest materials and design so far developed have failed to produce a maintenance-free apron. Careful operation by unloading equipment operators is the best preventive in this instance.

The capacity of chain conveying devices for pulpwood varies with width, which is a function of the number of chains; and with speed, which is usually limited to about 100 feet per minute to avoid excessive chain pin and sprocket wear.

5. FLUMES

The transportation of logs in flowing water is as old as the first tree felled into a river or creek. The use of the artificial water flume for transportation of pulpwood within the mill yard is a fairly modern development and in the southeastern United States, in particular, has come into use in the last few years. The flume has become increasingly popular for a number of reasons, but all of its characteristics are not on the plus side by any means. It has the advantage of tending to even out an otherwise varying flow of wood, but it will not do this to the extent some operators imagine; therefore, the first installation at a particular mill is sometimes a disappointment. There is no substitute for careful operation, and as in any conveying device, a uniform feed is the first requisite. The flume forms a convenient catch all for yard bark and trash and permits much better housekeeping in the case of a paved woodyard, but any such material placed in the flume must of course be removed and the systems of equipment used for this purpose commonly called "bark and grit removal systems" are quite expensive and not all free from maintenance. An average cost for such a system for an average flume will be in the neighborhood of $100,000 including all necessary in-the-ground and above-ground structures. The cost of the flume itself with the necessary pumps and return pipe line will vary between fifty and one hundred twenty dollars per foot depending on the type of construction and size. A concrete flume lined with steel plate with side aprons similarly constructed is most popular.

6. BELT CONVEYORS

Many mills have tried belt conveyors at various points in the wood-

"Of all the raw materials handled in large quantities in industry, pulpwood logs are one of the most troublesome."

yard operation, and many are presently in use in spite of a few sad experiences. The chief objection to this device for conveying pulpwood is the vulnerability of the belt to damage by impaction of sharp objects and the heavy cost of replacement of a damaged belt. Advantages are: smooth operation, the possibilty of a saving in capital expenditure as compared with other conveying devices, and a considerably lower maintenance bill if the belt conveyor is properly designed and above all, carefully loaded. Because of the extreme vulnerability of the belt, the one most critical point of design for any belt conveyor handling logs is the feeding arrangement. Logs must be so placed on the belt as to avoid any heavy impact and any great differential in speed between the oncoming billet and the belt. As a sorting conveyor a wide belt is far above any other conveyor in efficiency since it forms a smooth surface on which sorters may walk, if they dish, and unwanted logs are easily removed from the belt. Since a belt conveyor can properly be run at high speeds a large volume of wood can be handled on this device without heavy loading. If the belt conveyor is used as a yard collecting conveyor, some intermediate feeding device must be employed to avoid loading the belt heavily and unevenly.

7. AUXILIARY DEVICES

In addition to the major categories of conveyors and handling equipment, there are a number of minor devices in use in woodyards for special purposes. These include fork lift trucks of various sizes for handling wood in slings, straps, or pallets and racks of various types; front-end loaders for clean up and hauling debris; kicker rolls to accelerate billets for chipper feeds and in the sorting operation; overhead monorail hoists for sorting and for removing jammed logs at the chipper; and other similar devices too numerous to mention, many devised and built by mill personnel.

The above resume is incomplete but covers most of the more popular equipment in use today for the handling and transportation of pulpwood within the mill yard.

Factors in Storage

It would seem from the variety of equipment which has been used and is now in use that mill management and yard operators are in a constant search for the solution to a very difficult problem, and this is indeed true. Many operators in recent years are beginning to think that possibly the solution is to abandon altogether the storage and handling of wood in log form at the mill. The very rapid growth of chip storage yards at West Coast mills in the past few years, and the more recent adoption of this storage method in a few eastern mills is evidence of this trend. Meanwhile, storage of wood in log form continues at most mills in the United States and Canada, and therefore, a brief discussion of some of the factors involved is justified. These have been categorized and are briefly reviewed in the following paragraphs.

"The artificial water flume has become increasingly popular for a number of reasons but all of its characteristics are not on the plus side by any means."

1. TYPES OF STORAGE PILES

For above-ground storage, which is the only one we are immediately concerned with, there are just two ways to pile wood. The first is the jackstraw or random system and the second is racking. Most mills use both. A few stick exclusively to one or the other.

Jackstraw piling has the distinctive advantage that it can be done entirely with equipment without manual labor being applied directly to the wood. Whatever the arrangement of the billets as they arrive, they are unloaded and dumped into the pile in a random fashion. This can be done with cranes of any type using any of the devices described above. The chief advantage of jackstraw piling is that approximately 30% more storage volume is required for the same weight of wood. Moreover, since the sides of the jackstraw pile slope all the way to the ground considerably more than this 30% increase in ground area is required to store in this manner as compared with the alternate storage method of racking which we will now discuss.

Racked piling has the advantages stated above of requiring a much smaller volume and ground area for storing the same amount of wood as compared with jackstraw piling. The basic disadvantage is that racked logs whether on a car, on a truck, in a frame, or piled in the yard inevitably mean that somewhere someone has done the racking by hand. If this work has been accomplished in the woods, and the racked arrangement has been then maintained without further hand labor until the wood is finally piled in this state in the yard, then no particular disadvantage in labor costs is involved since all pulpwood is handled normally out of the woods in this condition. If the wood is first placed on the ground in the jackstraw condition and then racked in the yard then handling costs begin to skyrocket. Many mills prefer a combination of the two systems in which racked wood forms a more or less vertical wall to enclose the bulk of the pile which is straw stacked thus gaining considerable storage volume without the expense of hand racking the entire pile. The decision is up to local management and it depends on local conditions.

2. WOODYARD SURFACE

In recent years, many mills have taken advantage of the many benefits to be derived from some type of hard surfacing in the woodyard. Among these benefits are: less loss of wood, increased mobility of equipment, better appearance, and generally much better housekeeping. In addition, there is the less obvious advantage of lower maintenance on all handling equipment resulting from elimination of most of the usual yard-accumulated or yard-originating foreign material such as sand, gravel, and undetected metal scrap. It appears that best advantage may be taken of the paved yard where flumes are used to carry the wood from storage since the flume provides a convenient means of yard clean up, if the yard is paved.

The type of pavement used will depend on the relative cost of the different types in a particular area and, to an extent, the preference of the

"The purchase of cranes on price alone is poor economy since light equipment simply will not stand up and excessive maintenance costs soon eat up any savings in capital expenditure."

"The cable conveyor is most economical on very long runs and the tendency toward smaller storage capacities and hence shorter conveyors may have caused the decrease in popularity of this type of conveyor."

owner. The most durable and also the most expensive is a thick reinforced concrete mat, preferably not less than 9 inches in total thickness and founded on a well-compacted and well-drained subgrade. Lack of experience still leaves some questions as to the best design of concrete pavement for woodyards unanswered, and these include the frequency of construction joints, the exact mix design, and the degree of reinforcement. If sufficient experience in this application is gained before log storage becomes obsolete, the final basis of decision will, of course, be annual costs which will include the write-off of capital investment plus annual maintenance.

The alternate most popular paving material which is asphalt bonded Macadam or "black top" is of course more subject to damage by heavy equipment and falling logs and is by the same token more readily repaired. As in the case of concrete pavement, good subgrade drainage is a must. Some mills have objected to this type of pavement on the grounds that it permits contamination by asphalt particles which may carry through the system into the pulp which is particularly objectionable for bleached grades.

3. BARK ON VS. BARK OFF STORAGE

In the Northeast and North Central States particularly, back in the days when hand peeling of pulpwood was economically feasible, most wood in mill yards was stored in a clean condition. Except for one new factor, and two old ones, the now prohibitive cost of hand peeling would make any further discussion of this method of storage unnecessary. The new factor which is mechanical peeling of pulpwood in the woods, and at concentration yards, is growing at a fairly good rate, and therefore, some mills who had abandoned storage of cleaned wood are taking another look at it. On the other hand, in some areas the economics of such a system have proved disappointing, and mills are returning to storage of wood with the bark on. The two old factors are that the prior removal of bark results in a somewhat lower rate of deterioration of wood in storage plus a cleaner yard, and a few large mills still consider these advantages sufficiently important to cause them to store all wood in the clean condition. The final decision must be made by the individual mill on the basic economics of the problem.

4. STORAGE VOLUME AND STORAGE PERIOD

Storage volume at a particular mill will vary from a few days' supply to a full season's supply depending upon the seasonal availability of wood which is again dependent primarily upon the local climate. Canadian mills commonly cut in the summer and store for a full winter's operation whereas some southeastern United States mills have as little as two weeks' supply in storage at the mill. In at least one instance in the Southeastern United States, there is no storage at the mill proper, all wood being drawn from mill-owned or contractor-owned concentration yards in the local area. As better wood harvesting equipment is developed the necessity for large storage piles at the mill will decrease and this trend is very apparent at present. There are two major hazards in large storage, these being normal deterioration because of bacteria and insects, and the possibility of fire. Since proper safeguards against fire loss are required by underwriters and the woodyard arrangement is thereby affected, this next problem is discussed below.

5. FIRE PROTECTION

Underwriters require that the volume of a single pile be limited to minimize the probability of loss of the entire inventory in case of fire; therefore, woodyards are normally laid out for more than one pile of the stipulated size. In addition to the requirements of the fire underwriters, a further reason for such separation into piles is a necessity for access roads and suitable location of tracks and conveyors. Depending on the size of the individual piles and to some extent on the requirements under the underwriters concerned, fire fighting water may be applied either from turret towers or from ordinary hose houses and hydrants; usually very high piles of wood require some type of tower. The tower may be steel or concrete construction, the latter being preferable where the pile is immediately against the tower. The concrete tower may also be constructed as a protective shelter for the turret operator who can then direct the stream of water by means of a lever in the bottom of the tower connected to the nozzle or nozzles by means of simple mechanical linkages. In such an installation, the valve controlling the flow of water to the nozzles would also be located in the base of the tower. Where overhead gantry type cranes are used, fire fighting equipment is sometimes mounted on the cranes for application of water to the pile from above. The planning of the necessary underground fire protection piping system and the above-ground points of use is fairly complex for a large yard, and should always be done in cooperation with the underwriters concerned.

Off-Site Storage and Handling of Pulpwood

In the consideration of woodyard storage a wood procurement department generally is responsible for controlling the flow of wood. Since the wood procurement department has no control over consumption of wood at the mill, it must be able to adjust the supply to fit the existing conditions. Thus, a pulpwood inventory is maintained in order to cushion and offset effects of conditions which tend to disrupt the ratio of supply and demand.

In addition to storage of wood in the millyard, it is also practical to consider storage of wood in woodyard away from the mill site. In some cases, the entire inventory of wood has been moved from the mill to company woodyards.

There are several reasons why a mill may decide to keep their inventory in outside woodyards rather than at the mill site.

In some mills there is a minimum amount of storage adjacent to the conveyors which handle wood into the woodroom. In many cases, this is

"Chain conveyors are universally in use and just as universally condemned for high maintenance. There are certain operations in pulpwood conveying, however, which can be performed by no other equipment."

not enough storage to handle the requirements of the mill and thus some wood has to be stored at a distance from the conveyor system which requires various types of extra reclaiming, which is costly. In contrast to this, the reclaiming cost in outside woodyards is much less since crews and equipment can reclaim during slack periods.

Because of the rapid rate of reclaiming possible at the outside woodyards, fresher wood can be entered into the mill's system. With the use of outside woodyards for storage a maximum storage period in the summer can be held to about eight weeks and, in the winter, to about twelve weeks.

The storing in the outside woodyards permits a more even delivery of wood to the mill. This storage and reclaiming in the outside woodyards assures these yards of maintaining shipping quotas and therefore has a steady flow of wood at the mill.

"Because of the extreme vulnerability of the belt, the one most critical point of design for any belt conveyor handling logs is the feeding arrangement."

Storing in the outside woodyards also releases space at the mill site for future expansion or other facilities.

Under-Water Log Storage

The purposes of under-water log storage are:

1. To prevent deterioration of wood
2. To prevent contamination
3. To maintain a consistent percentage of moisture in the wood
4. To assist in thawing, or prevent freezing.

No. 4 above is used primarily in cold northern areas. Under-water log storage in the South is used with two different approaches. Some mills have log ponds where the normal supply of wood is stored. Southern pine decays rapidly during Summer months when piled on the ground, and since the safe period of storage is limited, a mill cannot build an adequate stock pile. Decay stops when wood is immersed in water. Southern pine becomes water-logged and sinks. Under-water storage has the inherent feature of providing wood which has a practically constant moisture content.

At one southern paper mill two species of wood are handled separately into and out of under-water storage. The wood used in this mill is brought in by barge, truck and rail, thus making it necessary to have unloading equipment which can receive wood from three sources and deliver to a battery of barking drums. This pond is divided into two semi-circular basins for the two species of wood. Each side has a storage capacity of 16,000 cords. Logs are reclaimed from the pond by two electric rotating gantry cranes.

Another under-water pulp storage system is in operation in the South. The conveyor to the log pond and the return to the woodroom is a water flume system. This under-water system has a capacity of 25,000 cords of barked pulp wood. Log reclaiming from this pond is done by a single electric gantry crane pivoted at the center of the pond.

The second approach is to use under-water storage for the purpose of emergency and excess wood storage, thus reducing to a minimum the amount of above-ground log storage. This method actually approaches a realistic working storage capacity. The logs in the ponds are used when the incoming supply is short or is deterred due to logging conditions in the forests.

By contrast, the ponds for emergency, or excess storage are, generally, rectangular in shape. This type of storage does not require a fixed conveyor system or cranes, as described above. Logs are discharged into the pond from trucks or by a crawler crane, logs are reclaimed by crane and discharged to the regular woodyard conveyor or flume. If the pond is wider than the effective working radius of the crane, logs will be reclaimed by the crane until this procedure becomes ineffective. The water level in the pond is then lowered, so that a bulldozer can get in one end of the pond and push logs over to the area where the crane can operate.

Possible Future Developments

Because of the high cost both in equipment and maintenance of the present system of handling pulpwood logs as a bulk material, many attempts have been made to handle logs as discrete packages with limited success. The most common point of application of this system is at the log sorting station. By means of accelerating kicker rolls and other devices previously mentioned, it is possible to accept wood randomly piled on a conveyor and without manual labor rearrange it on a conveyor more or less in a parallel condition to facilitate sorting for unwanted logs. Such a device applied very early in the handling and storage system might permit 100% racked storage and by conveying always in the parallel arrangement whether across or parallel with the direction of motion, could permit the use of much less rugged and expensive conveying equipment. A vast amount of development work would be required, however, and it may be that present systems of equipment will become obsolete simultaneously with pulpwood billet storage itself insofar as such storage at the mill site is concerned.

Recent development of very large off-the-road hauling equipment and the present limited use of such equipment in woodyards as a substitute for fixed conveyors may indicate a trend in this direction, the economics of which are yet to be fully evaluated. A considerable factor is the very great differential in federally allowed depreciation write-off for fixed conveying equipment versus mobile equipment, the latter having a distinct advantage in this respect. Certainly, the use of mobile equipment instead of the usual long conveyors permits a much more flexible woodyard arrangement, and the use for storage of outlying areas which would otherwise be too inaccessible.

The underwater storage of pulpwood is discussed elsewhere in this article, since the problems both of handling and storage connected with this particular method are quite different from those involved in above-ground storage.

Conclusion

There is no single operation in the pulp and paper industry in which new development in equipment and methods offer greater opportunity for saving than in the harvesting, storage, handling and processing of pulpwood up to and including the chip stage. Handling and storage at the mill site constitute a large segment of both the problem and the opportunity for profitable solution. This is a fertile field for the imaginative genius of pulp and paper management at all levels, and top management will do well to encourage the efforts of their operators and maintenance people in this direction.

Excess Capacity and Higher Costs Squeeze Paper Industry Profits

The profit position of many of our leading companies worsened in 1960. However, a few, notably Scott and CZ, showed the way to increased earnings. A comprehensive analysis of the situation is given below.

John W. Saunders

A familiar refrain runs through the 1960 reports of the nation's paper companies: Everything went up but profits. The downward trend in earnings that became discernible in the second quarter of the year and was accentuated in the third quarter continued unabated in the fourth quarter. In fact, it became more precipitous. Available reports indicate that almost 90 per cent of paper companies had a worsening of profit position from results earlier in the year.

While there were some aspects of industry performance last year that could hearten the optimists, there were bearish tinges to each bullish interpretation.

Production, for example, rose to a new high of 34,300,000 tons. But it was only one per cent higher than the 1959 level.

Industry sales mounted to $12,600,000,000. But this was a fairly modest increase over the year-earlier figure of $12,200,000,000.

Paper mills boosted their operating rates from 92.5 per cent to 92.8 per cent. But board mills declined to 90 per cent from 92 per cent.

Prices went up for some grades early in the year. But there was steady attrition in other grades throughout the year, culminated by the official drop in pulp prices in November.

Costs, meanwhile, continued to defy the law of gravity, marching merrily upward. Equally important, productive capacity continued to mount, making more paper available for virtually unchanged markets. Sometimes machines didn't run; sometimes prices fell.

The outcome was not difficult to determine. A survey of 42 companies showed 25 reporting lower profits than in 1959 and 17 reporting increases. Sales performance was only slightly better. Virtually all of the companies suffered a weakening of their profit position in the final quarter of 1960.

General Business Conditions

Distressing as this might be, paper companies apparently did not do too badly in comparison with other industrial groups. A survey by the First National City Bank of New York showed aggregate paper company earnings down three per cent from 1959, compared with a decline of two per cent for all manufacturing companies. Equally important for some paper companies, however, was a drop of 20 per cent in lumber company earnings.

The bank included 22 groups in its manufacturing category. Of these, five were ahead of their 1959 figures and 17 were below, with seven of these having declines of 10 per cent or more. Thus, paper companies would appear to have been among the "walking wounded" rather than the stretcher cases.

In a discussion of general business conditions, the bank's report made one statement that could well have been written about the paper industry:

"Intensified competition and narrowing profit margins were the rule in most lines of business. Reductions in list prices and unpublicized discounts were widespread. Because of lower selling prices, a number of companies reported that their dollar volumes failed to increase even though unit sales reached new records. . . . The most common problem for industry, however, was the unremitting pressures exerted by rising employment costs which continue to push higher year after year."

In the paper industry, profit performance ran fairly close to production performance. The grades showing the greatest strength last year were the printing papers (including newsprint), sanitary papers and high-quality packaging materials. The lower-grade packaging products showed little change while construction paper and board declined sharply in the wake of the sharp drop in home building activity.

"It is clear that 1961 will be another year of intense competition here and in overseas markets."

What About 1961?

There was a noticeable lack of thundering optimism at the recent

Paper Week sessions, indicating that the situation probably will get a little worse before it gets any better. Along with everyone else, industry sources expect the general economy to begin showing signs of a pick-up by the second half.

But there will be problems enough for all, as was indicated in the annual report of the International Paper Co. by John H. Hinman, chairman, and Richard C. Doane, president. They declared:

"There is a general expectation that the economy is due for an upturn later this year, so from the standpoint of demand the low point for the paper industry may not be far off. It is clear, however, that 1961 will be another year of intense competition both here and in overseas markets. Excess capacity and the cost-price squeeze are still with us. Pressure on profits is continuing."

On the brighter side, the executives commented: "Currently, the paper industry's problem of excess capacity is accentuated by slackened demand. Looking ahead, the rising trend in population combined with the paper industry's continuing development of new products, new uses and new markets promises reassertion of the industry's long-range growth trend as the economy recovers and moves ahead."

Profit Picture for '60

Here is how some companies fared last year.

International continued to lead the parade, although hardly in an encouraging manner. Sales slipped 2 per cent to $1,012,648,000 and earnings plunged 14 per cent to $71,669,000. The report tolled off the reasons: "Lower mill operating ratios; lower prices for pulp, for some paper grades and for some converted products; and for the lumber and plywood divisions both lower prices and lower volume."

Crown Zellerbach managed to stave off the ravages of these demands, boosting its sales 3 per cent to $553,711,000 and its earnings 2 per cent to $40,076,000. The gains were lower than those posted earlier in the year, however.

St. Regis saw its earnings plummet 27 per cent to $21,958,000 even though sales rose six per cent to a new high of $536,199,000. The report blamed weaker prices for some paper grades, lumber, plywood and some plastics as well as continuing rises in operating costs and administrative expenses. An intensive cost-reduction program is under way, it added.

SALES AND EARNINGS FOR 1960

Company	Sales	% Change From 1959	Earnings	% Change From 1959
Albemarle (April)	$ 40,759,000	+24	$ 2,139,000	.....
American Writing	14,267,000	—7	583,000	—9
Bergstrom	11,483,000	—5	706,434	—20
Brown (November)	59,173,000	+1	1,347,000	+89
Champion (March)	168,750,000	—13	7,678,000	—21
Chesapeake	28,102,000	+4	3,898,000	.....
Combined Locks (Feb.)	20,640,000	+11	1,328,000	+29
Consol. Wtr. Pwr. & Paper	88,780,000	+4	7,857,000	+14
Container	327,263,000	+1	17,076,000	—13
Crown Zellerbach	553,711,000	+3	40,076,000	+2
Crystal Tissue	5,427,000	+3	99,600	—1
Deerfield (Feb.)	7,575,000	+10	447,700	—9
Diamond Natl.	236,654,000	+1	12,706,000	+16
Downingtown	13,901,000	+1	66,200	+203
Federal	83,148,000	—5	4,000,000	—22
Fibreboard	111,932,000	—6	2,083,000	—56
Fitchburg	19,904,000	—1	544,800	—24
Glatfelter	26,383,000	—3	2,374,000	—1
Great Northern	62,013,000	+7	3,113,000	+68
Hammermill	78,655,000	+1	3,255,000	—11
Hudson (Aug.)	63,959,000	—3	1,101,000	—55
Inland	93,300,000	+1	6,500,000	+4
International	1,012,648,000	—2	71,669,000	—14
Kalamazoo	23,229,000	....	2,378,000	+15
KVP Sutherland (Sept.)	126,958,000	+5	5,478,000	+16
Keyes Fibre	19,521,000	+7	2,100,000	+7
Kimberly-Clark (April)	403,759,000	+10	31,343,000	+19
Longview (Oct.)	72,118,000	—1	8,532,000	—2
Mead	338,000,000	+2	13,700,000	—2
Minn. & Ontario	87,500,000	....	5,700,000	—4
Mosinee (May)	13,464,000	+3	686,800	+9
Nekoosa-Edwards	45,600,000	+1	2,460,000	—20
New Haven Bd.	24,635,000	+32	778,000	+2
Oxford	74,255,000	+2	2,784,000	+21
Packaging Corp. (June)	138,279,000	+8	6,511,000	.....
Paterson Parchment	12,949,000	—1	318,100	—61
Penobscot (March)	19,362,000	+3	1,092,000	—12
Puget Sound Pulp	36,588,000	+12	4,530,000	+1
Rayonier	129,100,000	....	9,500,000	—29
Riegel	97,917,000	+8	3,068,000	—8
Rising (Oct.)	5,551,000	—1	410,900	+1
Robertson Box	Not Available		564,800	—16
St. Croix	13,803,000	—2	1,454,000	+15
St. Regis	536,199,000	+6	21,958,000	—27
Scott	313,276,000	+5	27,730,000	+12
Sealright	54,948,000	+7	1,496,000	—31
Sorg	20,344,000	+2	947,100	+10
Std. Packaging**	140,670,000	+60	4,166,000	+1
Stone	45,128,000	+7	1,639,000	—15
Strathmore (Oct.)	14,458,000	+4	347,000	+7
Union Bag	212,959,000	+4	18,590,000	—6
United Board (May)	17,864,000	....	196,600	—56
S. D. Warren	71,941,000	+1	5,258,000	+6
West Va. Pulp (Oct.)	250,282,000	+7	11,017,000	—6
Whippany (Sept.)	48,680,000	+4	1,905,000	+27

* Year ended about Dec. 31 unless otherwise indicated
** Includes Brown and Bigelow for 1960

Scott Paper continued rolling along, with an earnings gain of 12 per cent to $27,730,000 outpacing a sales advance of five per cent to $313,276,000. Thomas B. McCabe, president, credited high demand for the company's consumer products as well as "intensified research, development and merchandising activities of the past few years plus the effective cooperation of Scott people throughout the business to control costs and increase efficiencies."

Kimberly-Clark, Scott's arch-rival, apparently was finding the going a little rougher. Earnings of $22,338,000 in the nine months ended on January 31 were barely ahead of the 1960 figure while profits in the January quarter fell 18 per cent to

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"The most common problem for industry was the unremitting pressures exerted by rising employment costs which continue to push higher year after year."

$7,021,000. Sales in both periods were slightly ahead of the previous year.

The printing paper field provided some bright spots. *Oxford* was among the leaders, boosting earnings 21 per cent to $2,784,000. It pocketed an additional $2,053,000 from the sale of timberlands. *S. D. Warren* cleared $5,258,000 for a gain of six per cent while *Sorg* climbed 10 per cent to $947,100.

Hammermill, however, was off 11 per cent at $3,255,000 despite a slight increase in sales. *Nekoosa-Edwards* dropped 20 per cent to $2,460,000 and *Glatfelter* was off 1 per cent to $2,374,000.

Great Northern appeared to be well on the way back after three years of listless earnings. Although still off from the 1956 high, profits climbed a healthy 68 per cent over 1959 to $3,113,000 as sales rose seven per cent. Increased newsprint sales and larger volume of specialty products contributed to the advances.

Also in New England, *Brown* chalked up earnings of $1,347,000 for an increase of 89 per cent over the depressed 1959 figure. Leonard A. Price, who became president last year, attributed the gains to the elimination of five unprofitable products including sulphite market pulp and lumber. He expressed the belief that profits would improve further this year, despite severe price competition.

In another new management situation, *Diamond National* continued to post substantial gains although weakness in lumber markets took the edge off earlier advances. Profits of $12,706,000 were 16 per cent higher than a year earlier although sales rose slightly more than one per cent. Nine-month earnings had been up 35 per cent from the 1959 period.

Champion, involved in a strenuous internal reorganization, found its profit position worsening. Earnings of $4,663,000 in the nine months ended on Dec. 31 were down 30 per cent while results in the latest quarter dipped 55 per cent to $1,063,000.

Rayonier also found good news hard to come by as lower pulp prices and higher costs whittled away the benefits of higher unit sales. Dollar sales eased slightly to $129,100,000 but earnings fell 29 per cent to $9,500,000.

The weakness of industrial packaging market showed up in the profit reports of *Container Corporation*, off 13 per cent for the year; *Stone Container*, down 15 per cent; *Union Bag*, off six per cent, and *Mead*, down two per cent. *Packaging Corporation* went 35 per cent below the 1959 pace in the six months ended on Dec. 31 and *West Virginia* was off six per cent in the Oct. 31 fiscal year and almost 30 per cent in the January quarter. *Inland Container* showed virtually no change at $6,500,000, including $202,000 from the sale of property. *Albemarle* apparently was unaware of the downward trend. It boosted nine-month earnings 22 per cent to $1,786,000 although profits in the final quarter were only 1 per cent ahead of a year earlier.

Even the food packagers had difficulties. *Riegel's* earnings were down eight per cent and *Sealright* plunged 31 per cent. *KVP Sutherland*, however, was up 16 per cent in the Sept. 30 fiscal year and 15 per cent in the December quarter.

On the West Coast, *Puget Sound Pulp* managed to keep ahead of 1959 despite the break in pulp prices. Earnings rose one per cent to $4,530,000 while sales advanced 12 per cent. Referring to the pulp price situation, the company said: "All of the price cut had to come out of the profit margin since there was no compensating reduction in our cost of manufacture."

Fibreboard did not make out as well as reduced construction activity, lower prices and new mill costs cut its earnings, which were off 56 per cent from 1959. Sales dipped six per cent.

"Grades showing the greatest strength last year were printing papers (including newsprint) sanitary papers and high quality packaging materials."

Shaking down a Maintenance Organization

How the Maintenance System Is Working Out at Charleston

Some of the successes and failures are discussed in the shaking down of the maintenance organization at this West Virginia Pulp and Paper Co. mill.

A. W. Allison and C. A. Shoudy,
West Virginia Pulp & Paper Co.,
Charleston, S. C.

Over the years since the mill start-up at Charleston in 1937, the maintenance organization had grown without too much long term planning. In 1952, the company attempted to reorganize its maintenance department on a more functional and efficient basis. The program undertaken was based on three assumptions:

1. A department should not be a combination of service and operating department at the same time.

2. All maintenance should be under one head.

3. The operators should have to contact only one person in the maintenance department to get a maintenance job done.

To meet the first concept, the whole organization was rearranged to remove service functions from operating departments. Then a maintenance superintendent was put in charge of all the maintenance function and the organization arranged in a logical method which fulfilled the second concept. Finally, to meet the third concept, a system of centralized maintenance with area supervision was set up.

In this arrangement, which was becoming popular in other large industries, central shops furnish the necessary personnel to undertake the maintenance jobs at hand. However, a representative of the maintenance superintendent, called an area maintenance supervisor, is placed in charge of strategic areas to expedite and coordinate the maintenance activities of the various crafts in their area. These are the men to whom the operators in that area go in order to get maintenance work done.

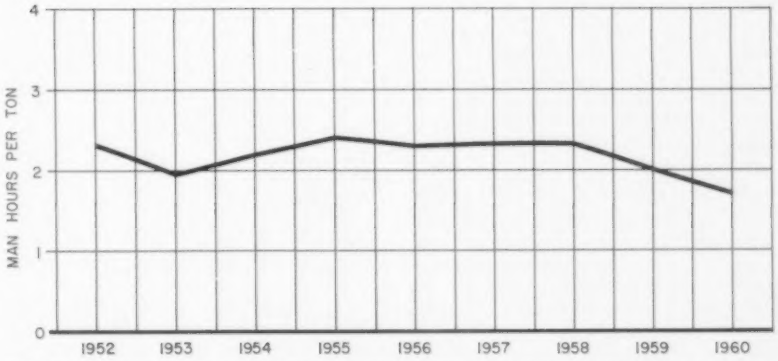

FIGURE 1. NUMBER OF MAINTENANCE MANHOURS PER TON OF PAPER PRODUCED.

Evaluating the Results

The new system went officially in operation on August 1, 1954. It has been in operation now for over six years and the major bugs should have been shaken out by this time. How is this first attempt in a southern paper mill of centralized maintenance with area supervision working out? Where one has helped give birth to a new approach, one hopes to be able to report the idea was completely successful. However, objectivity does not allow enthusiasm to run rampant. Here we will attempt to evaluate the setup with as little prejudice as possible. But how does one really, scientifically rate a maintenance organization in an ever-changing operation like a southern paper mill?

It is possible, by tabulation or curves, to evaluate performance of a maintenance organization with regard to its own history. Cost of maintenance per ton of production is a very obvious factor when, of course, the question of inflation is considered and the necessary corrections made for wage increases and material cost per ton. Probably use of maintenance man-hours per ton of product produced is a better method since a man is still a man, an hour is still 60 minutes, and a ton of product still weighs 2,000 pounds in spite of our inflation. Really, the only thing which has changed is the cost of making the ton of product.

Maintenance Man Hours/Ton

Figure 1 shows a curve of maintenance man-hours per ton for the

Presented at the joint fall meeting of the southern and southeastern divisions of Paper Industry Management Ass'n. on October 12-14, 1960.

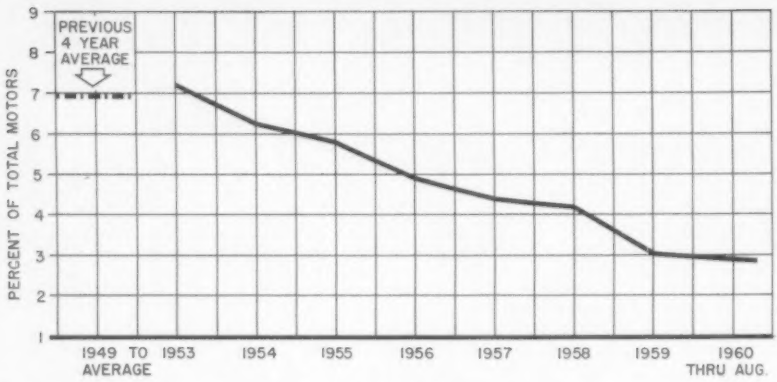

FIGURE 2. PER CENT OF ELECTRIC MOTOR FAILURES.

Charleston mill for the years 1952 through 1960. The general impression one gets from this curve is that it is practically flat. At a quick glance, this would indicate no progress.

Let's try to analyze it. The pulp and paper industry of the South as a whole is much more efficient today than it used to be. Employees are producing more per day and the equipment more per unit. However, this has been accomplished primarily through capital expenditures. Moreover, new equipment unfortunately requires more maintenance attention. Although we should have made greater strides in automating maintenance, with the exception of a few items like electric welding, spray painting, and power tools, maintenance still relies heavily on individual skill. To maintain a modern paper mill today it takes a much more skilled person than it did ten years ago.

It used to be possible to shim a loose bearing, line up a fourdrinier on-the-fly, or tie down a bent felt roll until the next wire change. Today, with the machine speeds encountered, we no longer dare to put shims in a bearing. It has been proven that the least amount of misalignment on a modern fourdrinier will cause all kinds of troubles. Although the industry in general is changing wires sooner in terms of days than formerly, the wear and the tear of the equipment now running between wire changes is much greater than ever before. Today, preventive maintenance during a wire change requires more and better trained men than ever before. Therefore, although the maintenance manhour per ton curve is practically flat since 1952, real progress has been attained. Had no improvement taken place, there would have been a sharp upsweep.

Motor Burn-Outs

Figure 2 gives another indication that progress had been made. This shows the percentage of motor burnouts at the Charleston mill from the year 1949 through August, 1960. In spite of the tremendously increased number of motors with the problem of making sure each one gets its share of attention, motor burn-outs have decreased from seven per cent in 1949 down to three per cent in 1960, and the downward trend still continues.

Machine Availability

Almost all mills in the South today use some sort of machine availability or efficiency to indicate their performance. Figure 3 shows total machine availabilities of the Charleston mill from 1953 to date. The dip at year 1957 is the result of the start-up of number 3 machine. The bottom line shows true machine availability with all delays for any reason included. It is always disconcerting to have a breakdown or a delay after a clothing change when the crew have to wait for the maintenance department. The next line shows what the availability would have been if all such maintenance delays could have been eliminated. This, to the crew, is what they should have. The top line is one of the maintenance group slipped in and shows what the machine availability would have been if the operational delays were eliminated.

Comparing Between Mills

Over the years, there has been an exchange of information about production, machine speeds, and operating efficiencies between competitors which has advanced our industry and benefited all of us. Although maintenance costs and other costs are going to come in for closer scrutiny as we compete within our industry, and particularly with lower overhead paper mills outside of this country, a good method of comparing maintenance costs needs to be developed. The methods used above are not practical for between-mill comparisons because different mills have various standards of maintenance. Some mills maintain the appearance of a New York bank, whereas others let their facilities deteriorate to some extent. Oftentimes maintenance man power in a complex and changing operation, like a pulp and paper mill, is used to a great extent in making improvements. Some companies are the leaders and spend a great deal of maintenance effort in trying the new. Others follow the leader and make a change only after it has been proven. The amount of changes and improvements contracted out and the amount done with mill forces varies within companies. For exam-

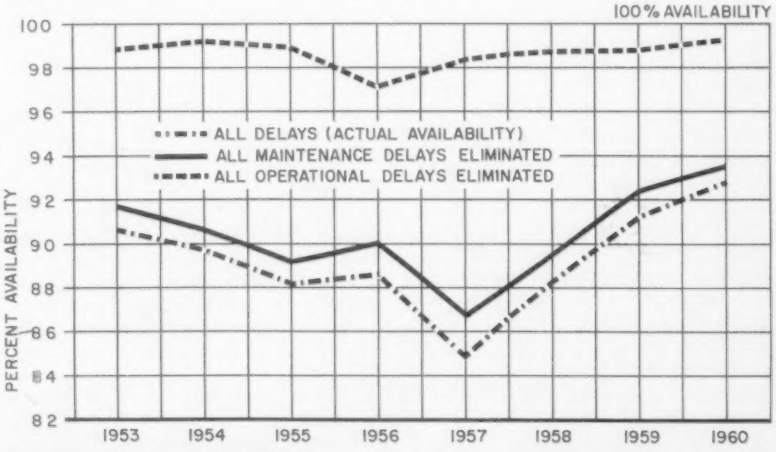

FIGURE 3. MACHINE AVAILABILITY.

ple, Figure 4 shows that we averaged about 27 per cent of our total maintenance man power doing experimental or improvement items. The remainder was spent on keeping the mill in repair.

We know some mills contract out almost all new work instead of letting their maintenance group do it. Unless factors can be determined to evaluate all of these variables, we know of no good, scientific method for really telling how a mill's maintenance effort objectively compares with that of its competition. If a method is available, the industry should be apprized of this fact.

Not too long ago, a few people in our organization had the idealistic hope that the sign of a good and efficient maintenance organization was operator satisfaction with the service. They have been rather badly disillusioned on that score. In inquiring around, there does not seem to be an operator who is truly happy with his maintenance in even what is considered to be a well-maintained mill. It seems that unless there are enough maintenance people on the payroll so that an operator never has to wait to get a job done he will never be happy. As a result, if such a mill exists, its maintenance costs would not be even remotely competitive. So certainly operator satisfaction is not a good criterion for evaluating an efficient maintenance program.

From the above it is apparent that we really are afraid to say that the maintenance setup installed at the Charleston mill is just what the doctor ordered and we would unreservedly recommend this type of approach for anyone with a similar problem. We are, however, starting a program of visits to our friendly competitors to try and determine how our maintenance compares and what should be done to make it better.

Maintenance Training Program

In launching our program, considerable time and money were spent to be sure that everyone in the mill, including the hourly workers, had a clear picture of just what was to be done with the maintenance organization. Through this means it was felt that stumbling blocks and opposition to the new organization were held to a minimum and caused little concern. However, soon after the organization began functioning it was possible to see many glaring errors of administration and job execution which had heretofore been undetected. Some of these were lack of uniformity in matters related to the

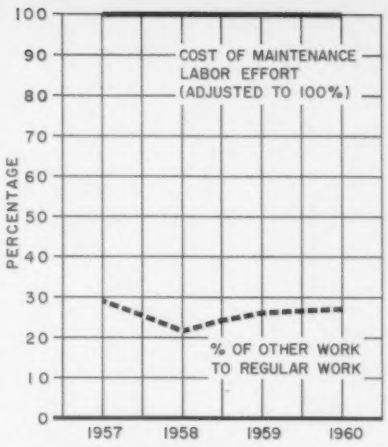

FIGURE 4. RELATION OF OTHER WORK TO TRUE MAINTENANCE.

unions, insufficient knowledge of the work done by journeymen, and lack of leadership in the hourly paid leadmen. It should be pointed out here that maintenance workers at the Charleston mill are represented by four different unions, so it is quite understandable that there would be quite a difference in their viewpoints and working practices.

Prior to the reorganization, a maintenance work crew consisted of a journeyman and a helper. Unfortunately, the helpers were apparently being told they should not handle tools except to pass them to the journeymen. Since at this time the pay schedule was such that two mechanics cost only 12½ per cent more than a mechanic and a helper, it was quite obvious that the helper had not only been priced out of the market but was not doing the work which would enable him to qualify as a journeyman.

Promotions from within were certainly desirable but a better yardstick than performance as a helper was needed to determine who should be promoted to journeymen. Contractual requirements were such that the better qualified man could not be promoted if he did not have seniority over the one who was less qualified. It became quite obvious that an apprentice program was in order and one was started in the machine shop in 1956.

The various apprenticeship committees have membership between the union and the company. The functioning of the apprenticeship program in the machine shop was so successful that it has been followed by others in the outside machinist group, the pipefitters, and the electricians. The need was greatest in these four shops as they had the highest ratio of helpers. Men have already graduated from this apprentice program and it is certainly gratifying to see their increased effectiveness. Indications are now that this program will definitely be continued.

Lack of Leadership

Even more serious than the journeyman problem was the lack of leadership in the hourly paid leadman group. These men were, of course, members of the same bargaining unit as the men whom they supervised. The original plan to have first line supervision on salary was strongly objected to by the unions. As most of you know, the elimination of a job in the bargaining unit takes much more than just a desire to get it removed. With such strong feelings from the unions, we felt it more judicious to try to work out something with the hourly paid leadman rather than disrupt the organization further by making a firm stand. It was felt at that time that much more could be done to strengthen the supervisory abilities of the leadman and an ambitious program was undertaken. This program was not a success, however, and immediate steps were taken to present a case before the National Labor Relations Board for removal of the leadman group from the bargaining unit. The case was thoroughly prepared and was accepted by the NLRB. The 17 hourly paid leadmen went on salary in July, 1958. We cannot help but feel that the maintenance organization would be far more effective today had it been possible to start the new organization with salaried first line supervisors.

Shops Organization

The shops organization consists of six major maintenance groups, each

"Over the years, there has been an exchange of information about production, machine speeds, and operating efficiencies between competitors which has advanced our industry and benefited all of us."

"It was finally agreed that the salvage function was not for the purpose of complying with an accounting procedure but for the purpose of saving money."

with its supervisor. There are no assistant supervisors as such. Men in the area maintenance supervisory jobs plan and schedule work just as it would be done by the shop head or his assistant. This has worked out more efficiently since the area maintenance supervisor knows the operating requirements and viewpoints and is not confined to on-the-job supervision. Without this planning, it is easy to see how a department supervisor would find himself bogged down in a mass of details. A good clerk in each shop minimizes the time spent by the supervisor in the office.

Whenever there is a job which requires considerable detailed planning prior to execution, a staff man is generally directly assigned to the department supervisor. Details are worked out to the satisfaction of the department supervisor and often the staff man is assigned a shift of workers to see that the job is properly executed. This has proved exceptionally effective, particularly in planning future jobs.

The salaried shop supervisors were good, experienced men, well versed in what was expected of them when they went on the new jobs in 1954. However, it was soon found out that because a supervisor could perform a function well yesterday it did not mean he could do it well today because of the vast changes which were taking place during the modernization of the Charleston mill. You might say that technological advances were more rapid than advances in the skills of the supervisors whose job it was to keep the machinery maintained. To help this group keep pace, the maintenance staff engineers group was augmented so that more shops could have the advantage of their technical knowledge. These engineers gave courses on such things as pumps, bearings, lubrication, and electronics. These courses with the resulting discussions certainly helped the shop supervisors keep pace and gave the engineers a much needed insight of the practical side of maintenance. This environment also gave the staff engineers every opportunity to develop quite rapidly in many phases of leadership.

Individuals in the staff group were not assigned to any particular shop or section of the mill but were placed where they could most benefit the company. To further broaden these men, they were used on a fill-in basis for various line functions as well as the area maintenance supervisor slots and many of them have since become line supervisors. Our only real difficulty (as far as the maintenance function is concerned) is that these men have proved themselves so valuable that they are much in demand in other functions of the mill. Transfers have been made when it was thought that there would be a more rapid promotion opportunity.

One Weak Point

One of the weak points found in the organization concerned the number of people telling the area maintenance supervisor what needed to be done. At the onset, it was agreed that the operating department should have only one person to go to which was achieved by creating the area maintenance supervisor job. It soon became very apparent, however, that the area maintenance supervisor was bogging down in the details of various small jobs which many different operators wanted done.

As a result, more and more men have been assigned permanently to each area to take care of the many small jobs which require little planning until at this time about 40 per cent of the available manpower each day is so assigned. This did not solve the problem, so after some discussion it was agreed that the number of people giving jobs to each area maintenance supervisor would be reduced. Although this materially helped, the lack of operational coordination is still a problem and there are still complaints by operations that work isn't being done when it should be. However, we do feel that at least all now recognize the problem.

One of the very important parts of our organization will not show up on any chart or graph. Prior to the reorganization, the operating supervision spent a considerable part of each day seeing that details of various jobs were being carried out by maintenance personnel. As the organization became more functional, the operating groups no longer found it necessary to supervise maintenance work closely. Operations has, in effect, found itself gradually weaned from the details of maintenance so they can now devote most of their time to increasing operational efficiency and effectiveness. Now, even the largest jobs are planned and executed without anything more than an interested observation.

General Shutdowns Eliminated

By 1955 the mill had reached such a size that our previous practice of general shutdowns for repairs became questionable. There just were not enough men to complete the work in the time allotted. It is interesting to relate that the Charleston mill hasn't had a general maintenance shutdown since 1955 even though the mill lost some time in 1958. During these periods of curtailed operations in 1958, the maintenance activities were likewise curtailed.

As mentioned before, one of the big problems is finding a yardstick for evaluating the maintenance effort. Our maintenance effectiveness of today may be far below where it will be in the future but many achievements point out already increased efficiency. One example is the substantial increase made in paper machine dryer availability through the use of a new type of steam joint developed by our maintenance department. This has practically eliminated the need for going inside a dryer for repairs. Unfortunately, bearings do have to be changed on the original paper machine at Charleston but the time for change has been more than cut in half in the last six years. The standard time for changing a front dryer bearing, for instance, is 45 minutes. There are many more items of a similar nature which could be enumerated. However, these types of improvements are to

"In summary, the concept of centralized maintenance with area supervision still appears basically sound for a middle, or large, size pulp and paper mill where considerable flexibility of work effort is demanded."

celgar bleached kraft
paper pulp is now available
five pound
test sample
on request
COLUMBIA PULP SALES LIMITED
Distributor for Celgar Kraft and Columbia Cellulose Sulphite Pulps
1030 WEST GEORGIA STREET, VANCOUVER 5, B.C. • 1600 DORCHESTER STREET WEST, MONTREAL, P.Q.

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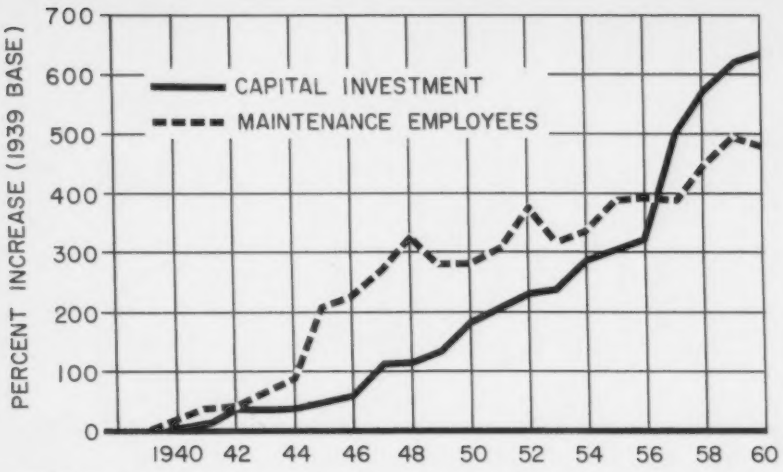


FIGURE 5. Relation of capital investment and number of maintenance employes.

be expected of any wide-awake maintenance group.

Investment/Maintenance Employee

Figure 5 shows the relation of capital investment to the number of maintenance employees. The investment in the Charleston mill has materially increased since 1954. With the installation of the new equipment it was readily apparent that much of the material removed was of great value, so a salvage function was started in the fall of 1957. This group reconditioned the equipment and material and returned it to the storeroom for issue as a new item. At first the reconditioned equipment was issued at an average price because the accounting department felt it would disrupt their procedures if it were handled otherwise. This practically brought to a halt the issuance of reconditioned equipment whenever there was a new material available at the same price. It was finally agreed that the salvage function was not for the purpose of complying with an accounting procedure but for the purpose of saving money, so the issues have been made at no cost since, with the general salvage burden borne by all. After such a decision, the use of the salvaged material immediately increased and it has been a paying proposition ever since.

Summary

One of the major advantages of our organization is that the maintenance superintendent is only one step removed from the worker. It seems logical that any corporate structure should not only have checks and balances in its fiscal responsibility but also in its manpower utilization. In our organization, the shops provide men with job knowledge sufficient to do the work; the area maintenance supervisor is the check and balance of their performance. Conversely, the shop supervisor is a check on the area maintenance supervisor, or AMS as he is locally called. The maintenance superintendent can direct his efforts more effectively through the shops and coordinate the mill operational needs through the AMS.

In summary, the concept of centralized maintenance with area supervision still appears basically sound for a middle, or large, size pulp and paper mill where considerable flexibility of work effort is demanded. There are obviously some bugs and dissatisfactions with the present setup which must be eliminated before the system can be completely recommended. This will be done.

Newsprint Battles Viewed and Reviewed, 1878-1960

Newsprint: Producers, Publishers, Political Pressures is the title of a new book reviewing the newsprint supply and price situation from 1937 to 1960. The author, L. Ethan Ellis of Rutgers University, an economic historian has for many years followed the perennial struggle between newsprint manufacturers and consumers over price and supply problems.

The newsprint production industry in the United States is a controversial and frequently unquiet area of the country's economy. Newsprint costs represent about one-third of the expenses of newspaper publishing, while newspapers constitute almost the entire market for the producers. The stresses and tensions engendered by this situation have for many years occasioned a long series of Congressional investigations, yet, in spite of the efforts of Congress and the Department of Justice to arrive at a finding which would bring about a stabler relationship between the parties, no law has been enacted.

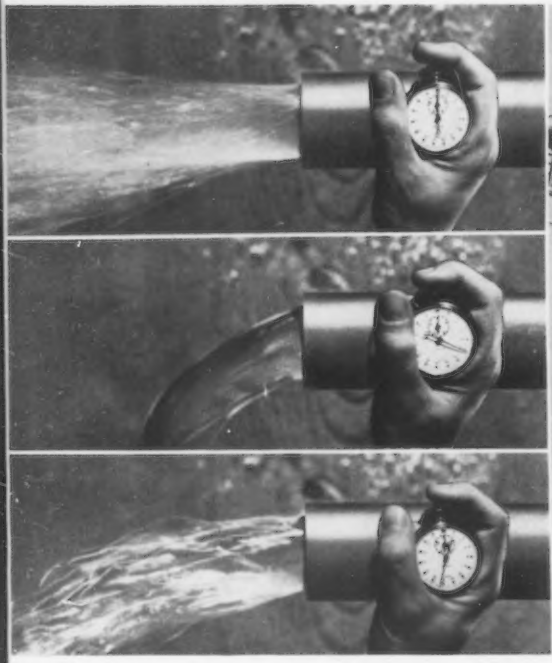
This book makes interesting reading for those not concerned with newsprint if only to observe how decade after decade the newspapers and their associations have made use for their own purposes of congressmen, senators and their committees.

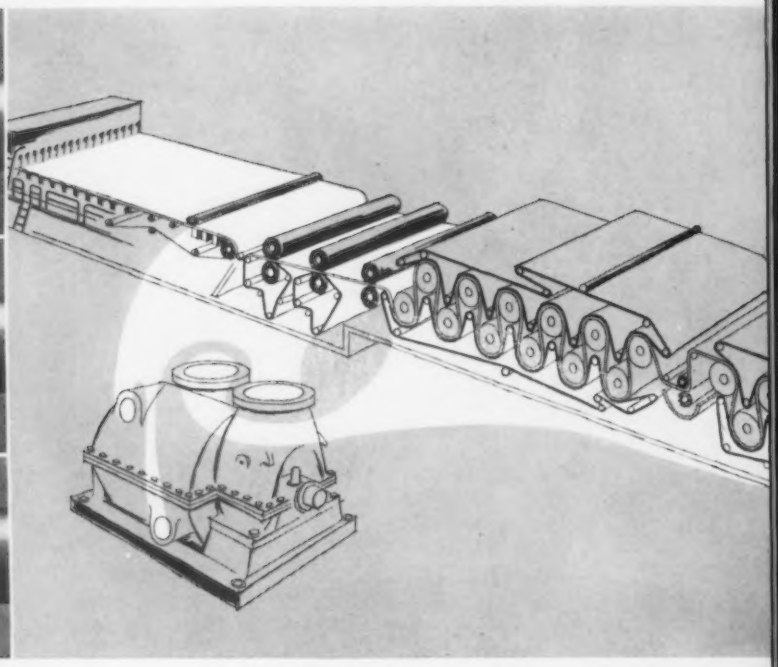
The millions of dollars spent investigating newsprint by Congress is incredible. Monopoly investigations, price investigations and supply investigation mount one on top of another year after year in a seemingly never ending pile. Although the publishers seem consistently to resist price increases, there have been exceptions. When the newspapers thought that OPA price controls were reducing their supply they then put pressure on Congress to have the OPA increase the price ceiling and later to remove it entirely.

Also, included in this volume is the author's previously published book "Print Paper Pendulum." This book reviews the history of newsprint manufacture, supply and price from 1878 to 1937. The pattern of the earlier volume is the same as the later, use of Congress to try to beat the newsprint manufacturers into line.

Their greatest victory was the removal of all duty on newsprint. This resulted in the rapid growth of the Canadian industry. It was a logical development since many U. S. mills were using Canadian wood, but the complete removal of duty at that time worked much hardship on many American producers, as the cheaper Canadian product drove U. S. mills to curtail production or divert machines to other grades. The price of the two volumes in one binding is $7.50. Copies may be ordered from the Book Department, Lockwood Trade Journal Co. 49 West 45th Street New York 36, N. Y.

ideas and news:





ACAP pump regulates flow instantly . . . without valves or varying pump speed. Proven ACAP (Adjustable Capacity, Adjustable Pressure) principle with internal pneumatic control automatically matches flow to demand. Regulation of flow through changing impeller clearances eliminates binding, plugging, saves power, allows system to operate at high efficiency regardless of demand.

New VACU-THERM system inhales water, exhales hot air . . . The centrifugal exhauster used in this new system makes it uniquely superior to conventional vacuum systems for paper machines. This exhauster permits a large percentage of input energy to be reclaimed . . . heat of compression yields hot dry air for the paper-drying cycle. Constant pressure is maintained over a wide range of volumes and paper porosities. No make-up water required. Less floor space needed. And Allis-Chalmers engineers the complete system: controls, separators and exhauster.

Which of these productive ideas could be working for you?

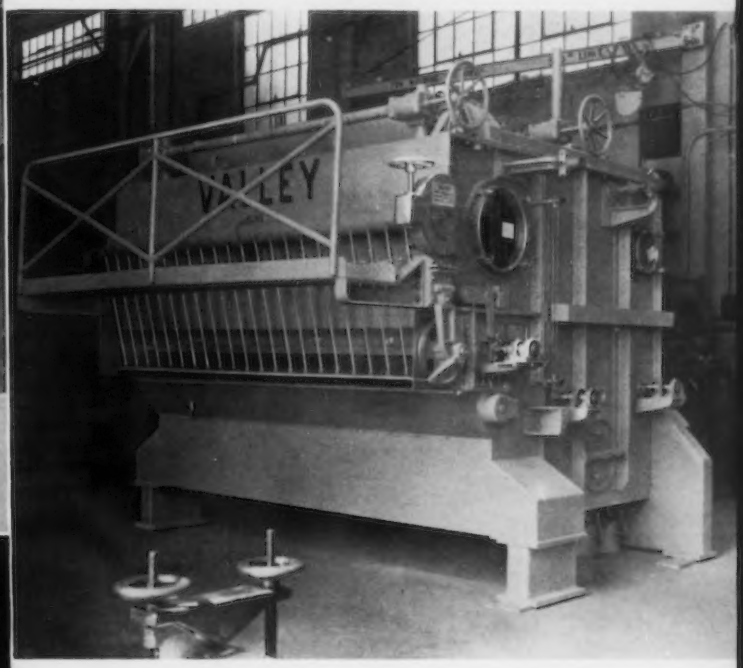
A pump that adjusts automatically. A valve that offers zero flow resistance. A vacuum system that produces usable heat. These examples demonstrate the extra value that is a standard with A-C... the greater efficiency and the added productivity which are yours when you buy A-C products, systems and services. Call your Allis-Chalmers representative for details on A-C "worth-more" features. Or write Allis-Chalmers, Industries Group, 903 South 70th Street, Milwaukee 1, Wisconsin.

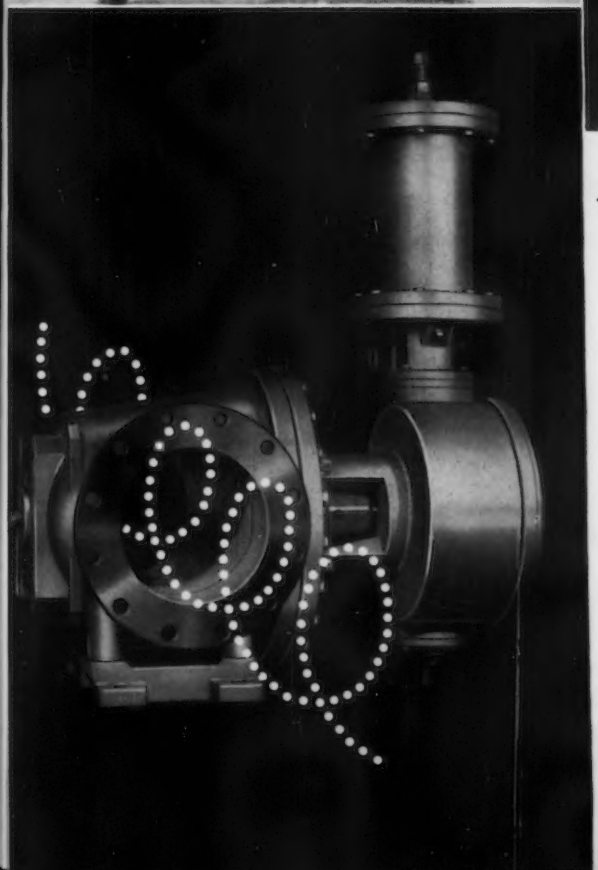
ACAP, Rotovalve and Vacu-Therm are Allis-Chalmers trademarks.

A-1456

Water vandals turn into "weaklings" . . . with A-C deaerating hot process softener. At this plant scale and corrosion can't damage the boiler system. This one-two punch hot process softener and deaerator combination prevents hardness and silica salts from causing dangerous scale deposits in the boilers. Oxygen and corrosive gases are eliminated when water passes through the stainless steel deaerator section with its unique counterflow design thoroughly scrubbing dissolved gases from the water. Result: Harmful contaminants never reach the boiler-steam system equipment.

"On-the-fly" adjustability . . . speeds production, ends costly machine shutdowns. New — from Valley Iron Works Corporation, an Allis-Chalmers subsidiary — a headbox that allows you to change from velocity formation to pressure formation, control turbulence . . . all "on-the-fly." Offers pressure and vacuum loading, both adjustable during operation.





"Open road" for unrestricted flow . . . This ROTOVALVE, when wide open, offers no greater resistance to flow than a straight pipe of equivalent length. Promotes lower pumping costs. Actually seats itself tighter with use. And special shutoff characteristics reduce water hammer. All moving parts are totally enclosed, yet easily accessible.

ALLIS-CHALMERS PRODUCTS FOR THE PAPER INDUSTRY: Look to Allis-Chalmers for compressors; controls; earth-moving equipment; industrial systems; lift trucks; motors; paper-making machinery; pumps; rectifiers; electrical generation and distribution equipment; tractors; transformers; unit substations; valves; water-conditioning equipment.

ALLIS-CHALMERS

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Dryden = Quality and Service

Papermakers know that Dryden is synonomous with quality. But Dryden is also known for complete and efficient service.

Dryden maintains boxcar inventories of sulphate pulps—ready to go at a moment's notice...Cars are constantly on the move all over the country and, in an emergency, can be rapidly diverted...Delivery can be made to any destination in the East in a maximum of ten days, and much more quickly in the Midwest – due to Dryden's strategic location on the CPR east-west trunk line.

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And, of course, technical information and service are always available whenever the need arises. Order a trial shipment of Dryden Sulphate Pulp—and get the extra bonus of quality and service.

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DRYDEN, ONTARIO, CANADA

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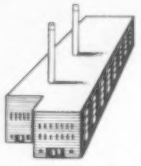
Felt facts

PRODUCTION RECORDS BROKEN AGAIN WITH ALBANY FELTS!

NEW FELT GIVES EXCELLENT FINISH!

The Actual CASE HISTORY

To improve finish and at the same time extend felt life is an almost impossible feat in mills making white patent coated board and suit box board. But Albany Felt Designers have done just that for a large mill in Illinois.



Working closely with the board mill superintendent, they designed a new felt for the top position on one of the machines. He reported that the finish obtained from this felt was **excellent throughout its longer life.** This is a real accomplishment in a mill where finish requirements are very strict.

MORE PRODUCTION, TOO!

In addition to excellent finish and trouble-free operation, this felt established a new all-time high production record. This can happen for you. Let us help you produce **more quality tons** per day.

AVAILABLE UPON REQUEST

Ask your Albany Felt Sales Engineer for your handy CALCULATOR. An invaluable aid for calculating Paper Length, Roll Diameter, Ream Weight and Roll Weight. It's yours FREE.

Talk it over with your Albany Felt Sales Engineer

AF **ALBANY FELT COMPANY** ALBANY, N. Y.

Dedicated to Paper Industry Progress

Prices of Fibers

MARKET WOOD PULP

FIRST QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

Delivered Basis

	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$90.00/ —	$90.00/ —	$90.00/ —
Bleached Gw'd.	97.50/100.00	97.50/100.00			
Kraft, Blchd.	‡140.00/150.00	‡140.00/150.00	150.00/ —	150.00/ —	150.00/ —
Kraft, Blchd. Hdwd.	135.00/140.00		140.00/ —		
Kraft, Semi-bleached.	130.00/140.00				
Kraft, Unbl.	117.50/125.00	125.00/ —	125.00/130.00	125.00/ —	
Sulphite, Blchd.	‡135.00/140.00	‡135.00/140.00	140.00/ —	140.00/ —	140.00/ —
Sulphite, Bl. Hdwd.	135.00/ —				
Sulphite, Unblchd.	125.00/ —	125.00/ —	125.00/ —	125.00/ —	125.00/ —
Sulphite, Unb'l. Gl'an.		140.00/ —	134.00/ —		
Soda, Blchd.	130.00/135.00	130.00/135.00			

‡ Depending on Brightness.

COTTON LINTERS

F.O.B. OIL MILLS

WEEK ENDED MARCH 14

	Atlanta	Memphis	Dallas	Los Angeles
Grade 1	n.a.	n.a.	n.a.	n.a.
2	n.a.	n.a.	n.a.	8.00/7.50
3	$7.00/6.50	$7.50/7.25	$7.50/7.00	7.25/6.75
4	6.50/5.75	6.50/6.25	6.50/6.25	6.50/6.25
5	5.75/5.25	5.75/5.50	6.00/5.50	5.75/5.50
6	5.25/4.25	5.00/4.75	5.25/5.00	4.50/4.25
7	4.25/3.75	4.25/4.00	4.75/4.00	n.a.

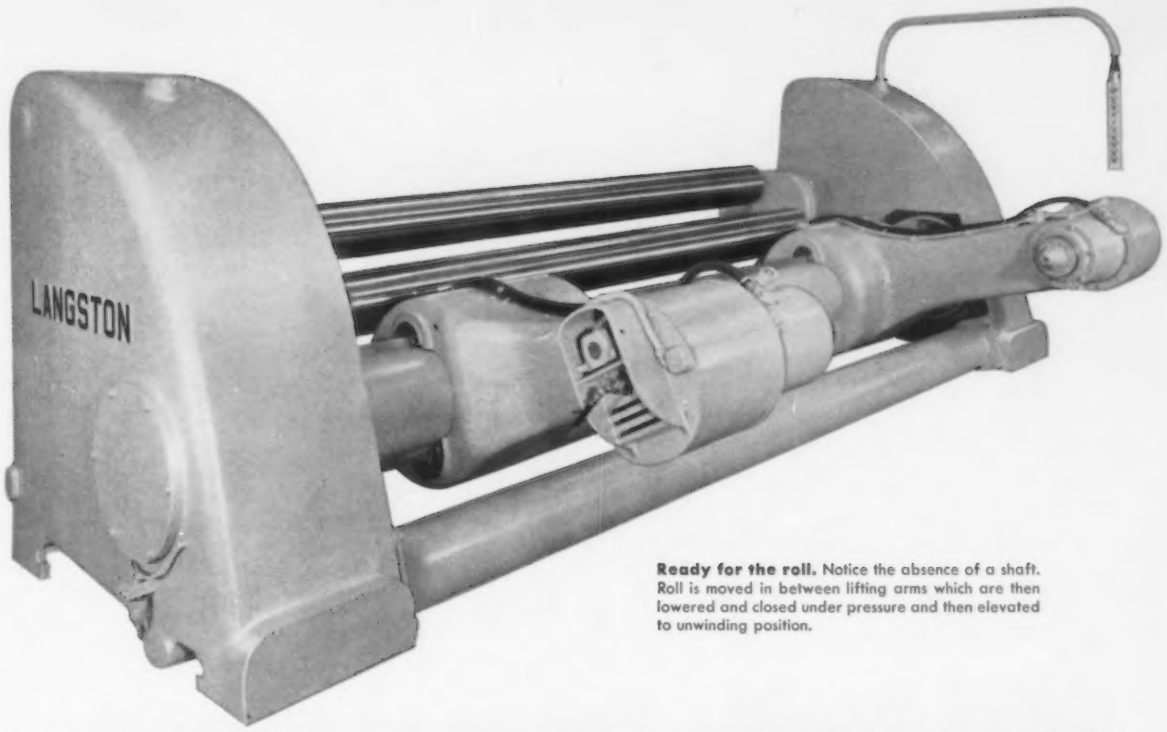
WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point — Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers and brokers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	March 20	March 20	March	March
No. 1 Mixed Paper	$ 7.00/ 9.00	4.00/ 7.00	6.00/ —	12.00/ —
No. 1 News	12.00/ 13.00	11.00/ —	11.00/ —	14.00/ —
Overissue News (Lg. size)	11.00/ 13.00	9.00/ 11.00	16.00/ —	18.00/ —
Mill Wrappers	19.00/ 22.00	9.00/ 11.00	9.00/ —	13.00/ —
Old Corrugated Containers	19.00/ 20.00	17.50/ 18.00	18.00/ —	17.00/ —
Super Resorted Kraft Paper	35.00/ 40.00	— / —	28.00/ —	50.00/ —
New Double Kr. Ld. Corr. Cuts	27.50/ 30.00	30.00/ 32.50	30.00/ —	27.50/ —
(Semi-chem. medium)	45.00/ —	45.00/ —	42.50/ —	— / —
New 100% Kraft Corr. Cuts	40.00/ 42.50	— / —	52.50/ —	— / —
New Br. Kraft, Env. Cuts	65.00/ 70.00	65.00/ 70.00	47.50/ —	45.00/ —
New Br. Kr. Bag Waste Prntd.	50.00/ 55.00	50.00/ 60.00	47.50/ —	35.00/ —
New Br. Kr. Bag Waste Unprintd.	55.00/ 60.00	60.00/ 65.00	55.00/ —	42.50/ —
No. 1 Groundwood Shvs.	25.00/ 30.00	20.00/ 25.00	10.00/ —	27.00/ 30.00
White Newsblanks	42.50/ 45.00	47.50/ 52.50	30.00/ —	55.00/ —
No. 1 Soft White Shvs.	55.00/ 60.00	55.00/ 60.00	50.00/ —	75.00/ —
Super Soft White Shvs.	65.00/ 75.00	70.00/ 80.00	60.00/ —	— / —
Hd. White Shvs.	75.00/ 80.00	80.00/ 90.00	75.00/ —	80.00/ —
Hd. White Env. Cuts	90.00/ 95.00	100.00/105.00	80.00/ —	103.00/ —
Col. Tab. Cards	40.00/ 42.50	40.00/ 42.50	35.00/ —	35.00/ —
Manila Tab. Cards	57.50/ 60.00	55.00/ 60.00	55.00/ —	60.00/ —
No. 1 Col. Ledger	32.50/ 35.00	30.00/ 35.00	35.00/ —	18.00/ —
White Ledger	45.00/ 50.00	42.00/ 47.00	45.00/ —	40.00/ —
Mixed Book & Mag.†	— / —	— / —	8.00/ —	— / —
No. 1 Books‡	15.00/ 17.50	18.00/ 22.00	22.50/ —	8.00/ —

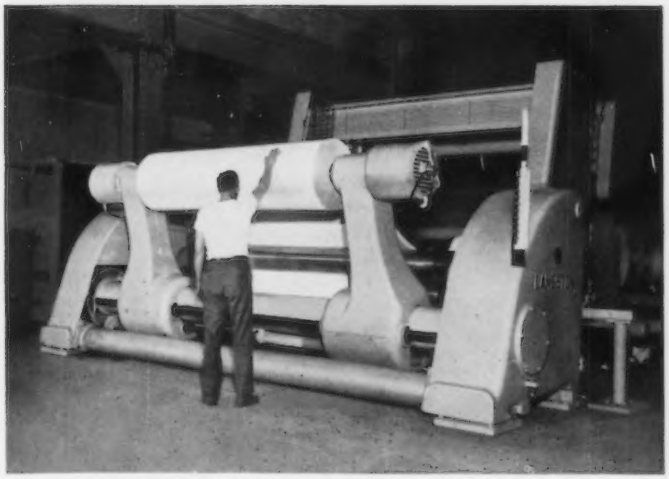
† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood.



Ready for the roll. Notice the absence of a shaft. Roll is moved in between lifting arms which are then lowered and closed under pressure and then elevated to unwinding position.

LANGSTON SHAFTLESS UNWIND STAND

Boost your production . . . reduce your slitting and rewinding costs



Easy, fast, completely safe. One man does everything. Operating pushbutton controls, he closes lifting arms, elevates roll, sets brakes.

One man can load the heaviest roll. No heavy shaft to handle. No cone tightening. No couplings to engage. No crane lifting. Just pushbuttons. This is the Langston shaftless unwind stand for rewinding and converting applications.

You not only save time, you also get better unwinding. Roll can be positioned laterally by pushbutton control—even when the machine is running. It's held firmly under pressure for complete safety throughout the unwind. Several braking arrangements can be provided to handle a wide range of grades and conditions. Available extras provide for handling very narrow rolls; for constant tensioning; for automatic braking of idler rolls; for automatic web alignment and side register control; for web oscillation; and for local or remote control.

This new Langston shaftless unwind stand can be used with any make of slitter. Available for maximum roll widths up to 140 in. and diameters to 84 in. For complete information, write Samuel M. Langston Co., Camden 4, N. J.

Langston *LEADERSHIP . . . BY DESIGN*

NEWS OF CONVERTERS

"100 Best Cartons of the Year" Selected

The "100 best cartons of the year," as selected by 16 printing and packaging experts, were announced March 21 during the annual meeting of the Folding Paper Box Assn. of America at the Drake Hotel, Chicago. Awards were presented to 53 box-makers whose work was represented among the winners.

Purpose of the competition is to educate and stimulate members of the association to improve the quality and usefulness of the boxes they produce and to demonstrate to American manufacturers and retailers the creative ingenuity of the folding carton industry. A total of 1,284 entries were submitted to the competition, compared to 1,209 last year.

Judges select cartons for awards in four major categories—superiority of printing, construction, potential new volume use, and general merchandising superiority.

Six of this year's entries were given awards in two different categories. Those winning dual awards were a carton of frozen bread, manufactured by the Lord Baltimore Press, Inc., Baltimore, Md., for the Morton Frozen Foods Division of Continental Baking Co., Rye, N. Y.; Hostess Brand egg carton, manufactured by Continental Can Co., Inc., Piermont, N. Y., for P & C Food Markets, Inc., Syracuse, N. Y.; Tetrex-APC, manufactured by F. M. Howell & Co., Elmira, N. Y., for Bristol Laboratories, Syracuse, N. Y.; Twinkles, manufactured by Waldorf Paper Products Co., St. Paul, Minn., for General Mills, Inc., Minneapolis, Minn.; Personalized Christmas Cards, produced by the Weyerhaeuser Co., St. Louis, Mo., for Hallmark Cards, Inc., Kansas City, Mo., and Gro-Kit seed planters, produced by Bruce Carton Co., Memphis, Tenn., for Ferry-Morse Seed Co., Fulton, Ky.

EXCELLENT REPRODUCTION of color photography won for this carton a first award in offset lithography in the 1961 Folding Carton Competition sponsored by the Folding Paper Box Ass'n. of America. Judges commented on the realism of the grapes and the napkin appearing on the surface and also declared that extraordinary printing technique was shown in capturing these details. The total job done by Berles Carton Co., Inc., Paterson, N. J., is free from any of the defects common to lithographic printing and represents a difficult problem successfully overcome. The carton was produced for the Hudson Pulp & Paper Corp., New York, N. Y., which shared design honors with the Gray Advertising Co., also of New York.

New Chattanooga Company To Convert Yarn from Paper

A new company has been formed in Chattanooga to convert yarn and knitted fabric from paper.

David W. Gott, president of the new company, Strandex, Inc., is now in the process of developing a pilot plant for both research and production on the new type yarn which was developed by Ronald H. Marks, of Dallas, Tex.

Greetings Corp. Promotes Oster

Joseph Oster, formerly assistant to the president and director of marketing, has been elected a vice president of American Greetings Corp.

Mr. Oster, who has been with the company 12 years, began his career with the firm as a purchasing and merchandising trainee. In 1952, he was named administrative assistant to the merchandising vice president. He later served as manager of stock control.

Central Ohio Paper Elects Vice President

J. F. Page, Jr. newly installed manager of the Cleveland Division of the Central Ohio Paper Co., was elected vice-president of the company at the annual meeting in Columbus in March. Other officers were re-elected.

Mr. Page has been with the Cleveland Division of Copco since WW II when he served as a navigator in the air force. He is a graduate of Williams College.

Looking for a new position?

Looking for new personnel?

Keep your eye on our Classified Advertising Section

Divisional Aides Named At Wisconsin River

Herbert C. Nicholls has been named product manager for corrugated containers, and Eugene Van Slambrouck product manager for folding cartons in the paperboard products division of Consolidated Water Power & Paper Co.

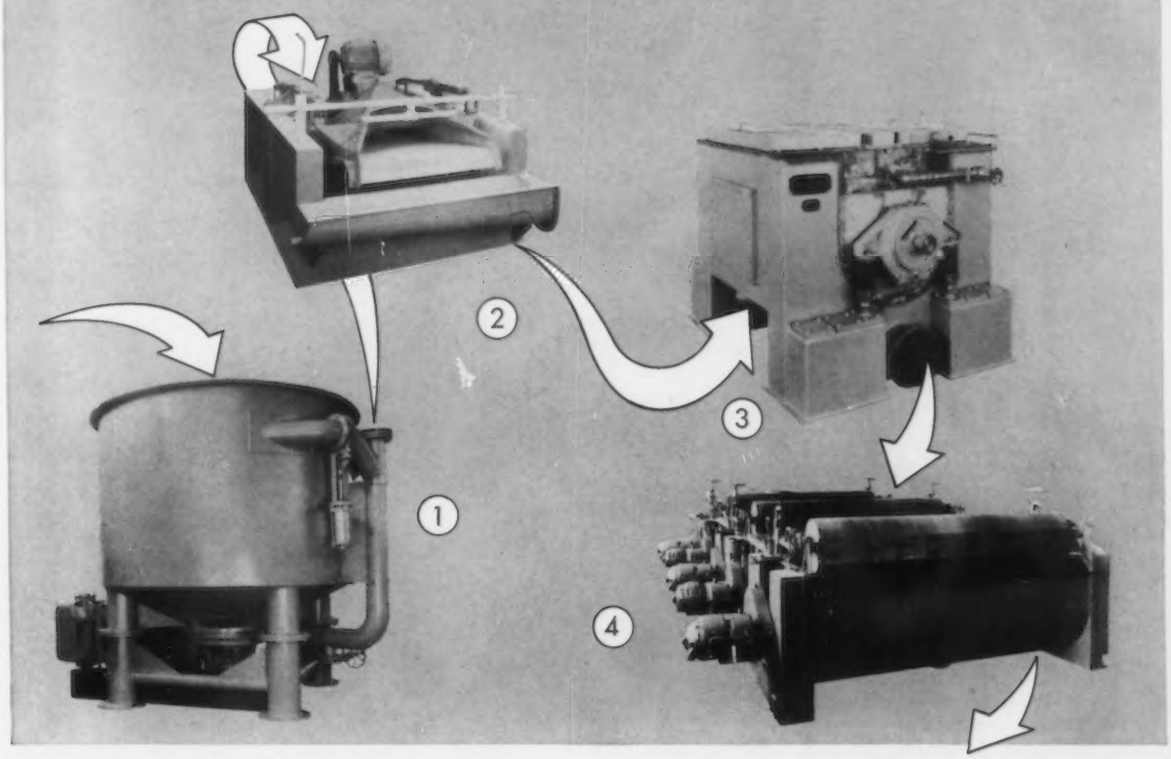
Columbia River Appoints Cook to New Position

Columbia River Paper Co. has announced the appointment of Russell M. Cook, general manager of the firm's Vancouver division converting department, to a new position as technical service representative. Mr. Cook will be headquartered at the Los Angeles sales office but be available to serve customers in all areas where it has sales offices.

Mr. Cook is an experienced technician with 28 years in the graphic arts field combined with extensive knowledge in the field of paper converting, waxing and laminating.

DE-INK
EQUIPMENT

1. IMPCO SOLVO PULPER
2. IMPCO VIBROOKE SCREEN
3. IMPCO LINDBLAD SCREEN
4. IMPCO OPEN CYLINDER WASHERS



Installing a new de-ink system? Looking toward modernizing your existing system? Stripping coating from broke? Need highest quality for good printability?

The finest de-ink grades are being made down by the gentle but complete pulping action of the Solvo. The new Vibrooke Screen working in conjunction with the Lindblad Screen is the best combination of screening action available at any price. For ink, dye, coating and clay removal, Open Cylinder De-ink Washers are considered superior by experienced operators. Impco has been furnishing these dependable units for forty years! Wire cleaning on each cylinder revolution allows highest capacities.

Impco's long experience in de-inking is available to you in your remodeling or new plant planning.

IMPROVED MACHINERY, INC.
NASHUA, NEW HAMPSHIRE

IN CANADA: Sherbrooke Machineries Limited, Sherbrooke, Quebec

PJT NEWS OF SUPPLIERS

R. P. Simoncini

E. C. Van Stavern

Hobbs Manufacturing Co., Worcester manufacturer of winding machinery, cutting equipment and die presses, has announced the appointment of Robert P. Simoncini as assistant sales manager of the firm's Machine Division.

A member of the Hobbs organization for 15 years, Mr. Simoncini has served as district sales manager for the Northeast territory and, prior to this, he was the sales and service engineer in the New York area office.

Hobbs has also named a new sales engineer for its northeast sales area. E. Clayton Van Stavern has been appointed to fill this post.

Mr. Van Stavern, who attended the Missouri School of Mines and Metallurgy, was formerly a sales engineer with Mt. Hope Machine Co., Taunton, Mass. He brings with him a broad background of experience in web-guiding and handling equipment.

OY Hercofinn AB, a new company, has been formed in Finland according to Henry A. Thouron, general manager of Hercules Powder Co.'s International department. The new company will build and operate a plant in Finland for the production of chemicals for the Finnish paper industry.

The main offices of the new company will be in Helsinki and the plant will be constructed in Tampere, a site strategically located to best serve the paper industry. Construction of the new facilities will start in the second quarter of 1961, with the plant to be operational sometime in the first quarter of 1962.

Managing director of the new company will be Donald C. Kane, who is at present division manager in charge of paper making chemicals at NV Hercules Powder Co. in The Netherlands.

J. M. Huber Corp., New York, has established an office in Syracuse, N. Y., for the sale of clays and pigments to the paper industry. The office is located at 15 Centennial Drive, and is headed by Robert T. Larkin.

Mr. Larkin joined Huber in 1956 and has served in various sales capacities for the Industrial Products department in New York. He is a graduate of Hotchkiss and Yale University.

Huber now has sales offices serving the paper industry in Appleton, Wis.; Baton Rouge, La.; Houston, Tex.; Kalamazoo, Mich.; Macon, Ga.; New York, N. Y.; Syracuse, N. Y.; and Watertown, Mass.; all of which are in or near large paper producing areas.

Shawinigan Resins Corp., Springfield, Mass., has elected W. Roy Elliot president and general manager. In addition, he was elected to the board of directors.

Mr. Elliot, who has been vice president and general manager, succeeds Robert K. Mueller who was elected board chairman. At the annual meeting also, William H. Bromley was elected secretary of the corporation and Alfred W. Long was elected treasurer.

"Oh, dear! Just when we managed to cut down on river pollution 70 per cent!"

At the same time, the immediate appointment of four vice presidents was made known. They are: William H. Bromley, vice president marketing; Robert N. Crozier, vice president, research; John C. Kenny, vice president, production and engineering; and Alfred W. Long, vice president, finance and planning.

R. T. Larkin

R. A. Gordon

Link-Belt Co., Chicago, Ill., has appointed Robert A. Gordon assistant manager of district sales, with headquarters in the executive offices in Chicago. He will assist in coordinating all phases of district office operations.

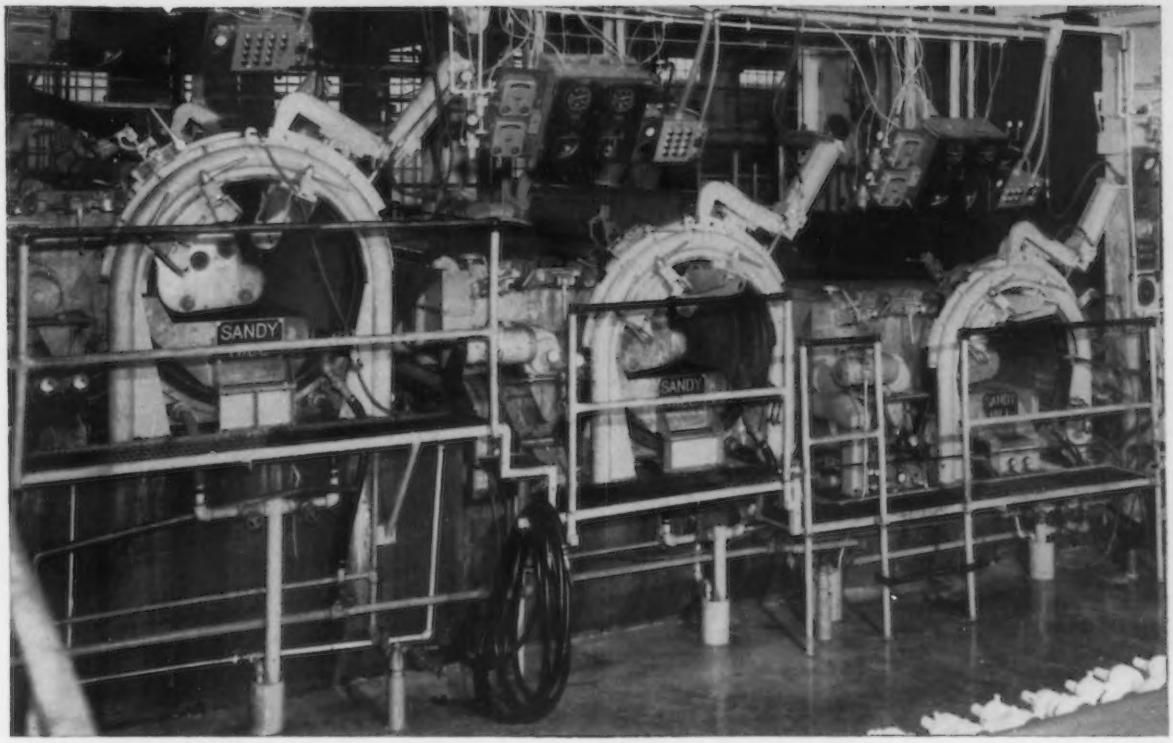
Mr. Gordon, a graduate of Yale University School of Engineering, joined Link-Belt in 1946, in the engineering department of the company's Philadelphia plant. He was subsequently transferred to the Pershing Road plant in Chicago in 1947 as sales engineer, where he specialized in the application and sale of drying equipment, oscillating conveyors and power plant equipment. Since June 1958, he has been on special assignment at the executive offices.

Nopco Chemical Co., Newark, N. J., has named Walter E. Brewer to the newly created post of general sales manager for the Industrial Division. The appointment was announced by J. N. Gammon, vice president in charge of Industrial Division sales.

Since 1959, Mr. Brewer has been sales manager for Nopco's Textile Fibre Department and the firm's Jacques Wolf & Co. subsidiary.

A graduate of Muhlenberg College, Allentown, Pa., he joined Nopco in 1936 as a control chemist, subsequently serving as sales representative in the New England and Pennsylvania areas. In 1948, he was named eastern district sales manager, and in 1955 became sales manager for Nopco's Textile Chemicals and Textile Fibre departments.

As the Industrial Division's general sales manager, Mr. Brewer will work from Nopco's main offices at 60 Park Place, Newark 1, N. J. Nopco's



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■ The first 3-unit arrangement of the ROTOFORMER, Sandy Hill's revolutionary papermaking machine, is now in successful use at Sorg Paper Company, Middletown, Ohio. The superiority of the multi-unit Rotoformer over the 5-vat wet end which it replaced is proved through better sheet formation, drier sheet delivery into the press section, space savings, economies in felt life and felt cleaning, simplicity of operation — plus many other advantages. Our new laboratory is ready to show you what the Rotoformer can do for you.

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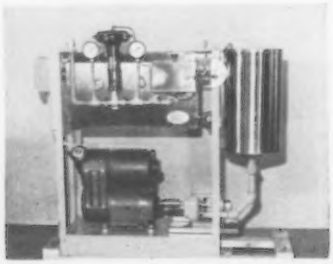

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Industrial Division produces vital chemical ingredients for a wide range of processes and manufacturing operations in such industries as textile, paint, paper, leather, rubber, cosmetics, pertoleum and metalworking.

Southwestern Engineering Co. of Los Angeles, Calif., has named Robert V. Gunther executive vice president and general manager.

Mr. Gunther has been with Southwestern Engineering since 1942, serving successively as engineer, chief engineer, and assistant manager of the manufacturing division, and more recently as vice president and general manager of the engineering and construction division. He took an active part in the early development of the SWECO Separator, manufactured by the Vibro-Equipment Division.

Mount Vernon Mills, Inc., Baltimore, Md., has announced that K. E. Fryfogle would join that organization April 1 as president of a newly established division to be known as Mount Vernon Dryer Felt Co. Mr. Fryfogle will have complete charge of the administration of this division which will comprise both manufacturing and distribution. Other officers of the company will be B. C. Aldrich, vice president, and W. W. Jones, secretary treasurer.

Mr. Fryfogle has been associated with the Abney Mills, Greenville, S. C., as manager of its Brandon Sales Co., distributors of dryer felts to the paper producing industry.

OBITUARIES

Robert Anderson, 38, of Williamstown, died February 21.

He was vice president and treasurer of Mohawk Paper Co., having joined his father in the business when he returned to Williamstown in 1959 from a tour of duty as a lieutenant in the U. S. Navy.

Frederick W. Benda, 50, secretary and general manager of the Toledo Paper Box Co., died March 12 in St. Vincent's Hospital. A lifelong resident of Toledo, Mr. Benda had been with the box company 27 years.

G. R. Haggerson, technical director, Rex Paper Corp., Kalamazoo, Mich., died March 6 after an extended illness.

ONE DILUTION takes 12% stock down to a uniform 5% in dual-purpose chest at Canada Paper Company, Windsor Mills, Que.

See the two stock chests in this picture?

Engineers at this mill solve a serious storage problem—by making this *one* stock chest do the work of *two*. A LIGHTNIN Side Entering Agitator helps them do it.

High-density unbleached kraft stock feeds into the 60-ton chest from the brown-stock washers at a consistency of 12-16%.

Out of the same chest comes stock diluted to a uniform 5%. It goes right to the refiners. No second chest is needed for leveling out consistency fluctuations. Refiners operate smoothly—even though there's no consistency regulator in the system.

How it works

Mixing takes place in the chest bottom. Here, in an 8-foot-deep zone of reduced diameter, the LIGHTNIN Agitator swiftly and continuously blends stock with incoming dilution water. Consistency of stock anywhere in this zone varies less than 0.1% (bone-dry basis) from the specified average.

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This is no accident. When you use LIGHTNIN Agitators in your stock chests, you can specify exactly the performance you want—*and get it.*

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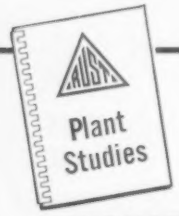

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Figures of the Week

PAPER PRODUCTION RATIO REPORT—American Paper & Pulp Assn. Figures
(Production as per cent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

	Feb. 11	Feb. 18	Feb. 25	Mar. 4	Mar. 11
1961	91.9	88.5	88.0r	90.8r	92.4
	Feb. 13	Feb. 20	Feb. 27	Mar. 5	Mar. 12
1960	98.2	98.5	96.5	97.1	97.6

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	96.5	97.7	98.1	96.9	97.6	96.1	81.2	91.7	89.1	94.8	92.0	80.2	92.7
1961	87.9	90.0‡											

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1954	1955	1956	1957	1958	1959	1960	1961
Year to Date	94.2	95.7	100.5	95.9	88.0	89.7	97.2	89.4
Year Average	91.6	96.2	97.9	90.4	87.0	92.2	92.8	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available.

PAPERBOARD OPERATING RATIOS†—National Paperboard Assn. Figures

COMPARATIVE WEEKLY SUMMARIES

	Feb. 11	Feb. 18	Feb. 25	Mar. 4	Mar. 11
1961	90	87	89	89	93
	Feb. 13	Feb. 20	Feb. 27	Mar. 5	Mar. 12
1960	96	96	91	94	94

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1960	92	95	94	93	94	92	78	94	88	93	86	73	89
1961	88	89											

‡ Preliminary.
† *Per cents of operation based on "inch-hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Assn. Figures

ITEM	WEEK ENDING March 4, 1961	WEEK ENDING March 11, 1961	CUMULATIVE TO DATE Jan. 1, 1961 to March 11, 1961
% Activity	89%	93%	89%
Total	316,648	323,093	2,959,372
Containerboard—Domestic Use	159,947	154,396	1,470,976
Liner	108,021	101,425	972,587
Corrugating Material	47,895	47,262	452,611
Chip & Filler Board	4,031	5,709	45,778
Boxboard—Domestic Use	101,350	98,859	947,326
Folding	60,627	58,174	557,110
Set-Up	8,698	10,964	94,822
Special Food Board	32,025	29,721	295,394
Other Paperboard	55,351	69,838	541,070
Containerboard Type	26,862	37,719	256,595
Boxboard Type	28,489	32,119	284,475
Total Orders			
Received	355,465	327,851	
Unfilled End of Week	438,950	448,677	

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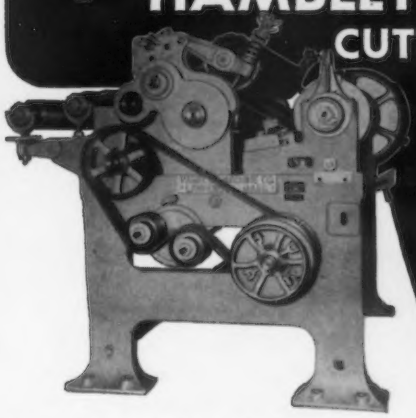

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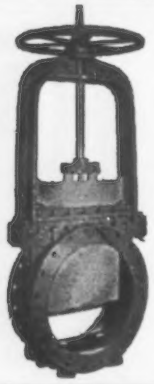

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METALS — I.B.B.M. all iron, bronze or stainless steels, body parts plain or rubber lined.

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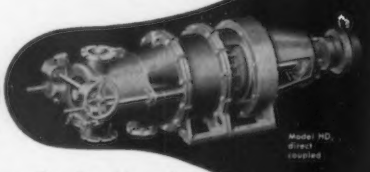

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The proposals will be opened in the presence of and the award of contracts made by the Joint Committee on Printing to the lowest and best bidders for the interest of the Government whose bids are in conformity with the requirements of the proposal. The committee reserves the right to reject any or all bids, or to accept any bid or any part and reject the other part if, in its opinion, such action would be in the interest of the Government.

Blank proposals containing the instructions, schedule, and specifications, accompanied by standard samples, may be obtained by addressing James L. Harrison, Public Printer, Washington 25, D.C.

Contracts will be entered into for supplying the quantities required, whether more or less than the estimates, as provided in paragraph 26 of the Instructions.

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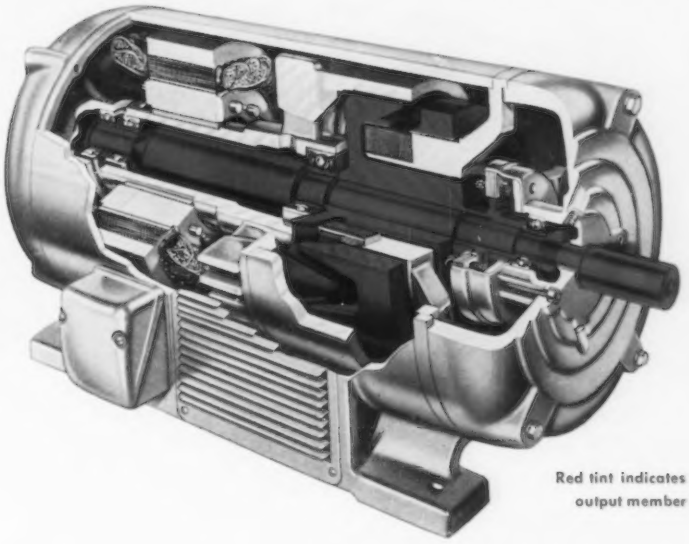

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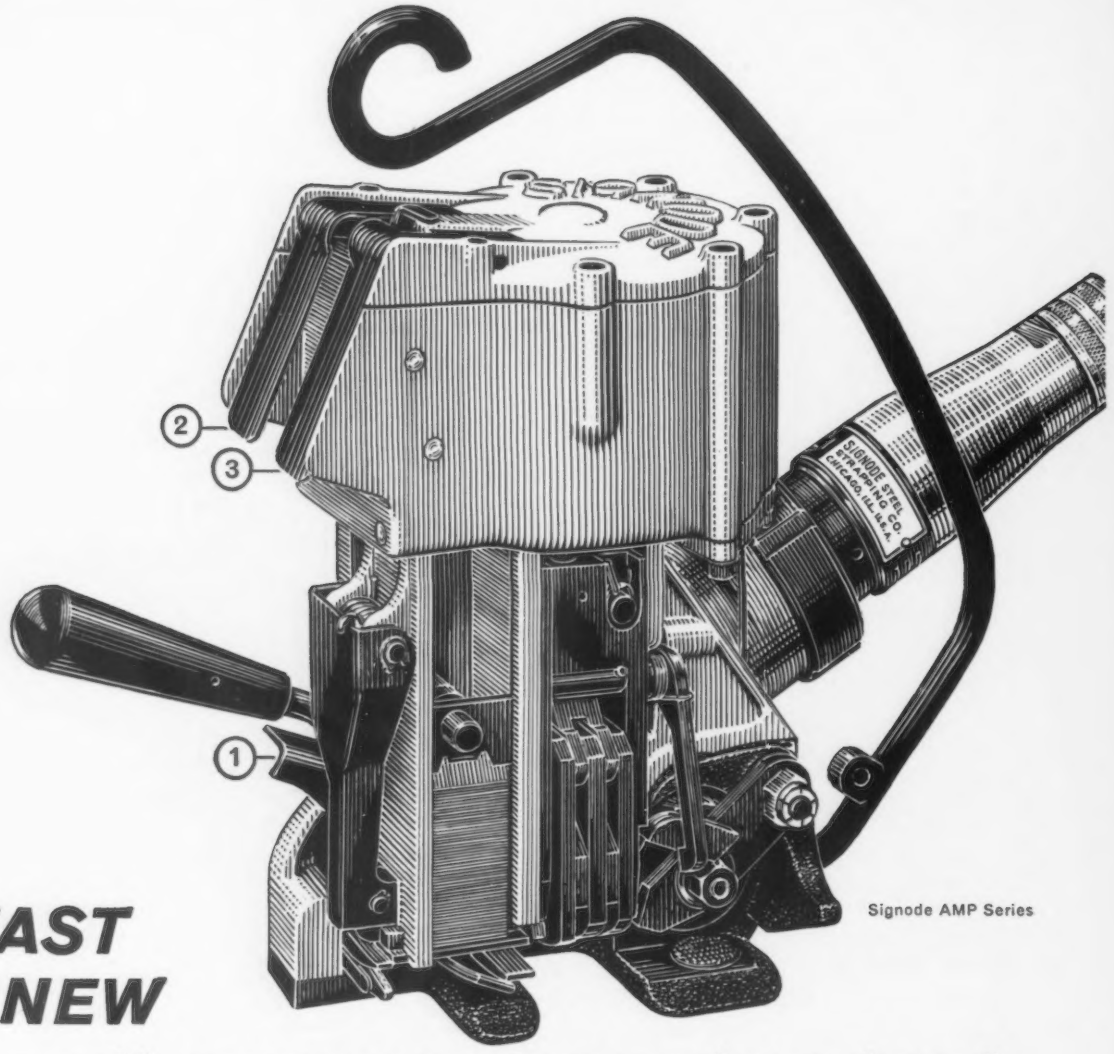

Signode AMP Series

FAST NEW all-power strapping tool

- Air power tensions, seals, and severs the strap.
- All the operator does is depress lever #1, insert the strapping, press the tensioning lever (#2), then the sealing-severing lever (#3) and remove the tool.
- Tensioning can be stopped (and held) at any time, as for the insertion of edge protectors.
- Uses new easy-loading Signode NESTACK seals that come in nested stacks (no retaining wire) that eliminate waste, spillage and delay.
- Weighs only 22 pounds, even though the base is steel for maximum durability.
- Compact balanced design and short base make tool easy to use on small as well as large surfaces.
- Comes equipped with universal suspension bracket that's quickly changed for strapping on top or side of package.
- Available now in models for ⅝″ and ¾″ strapping, .015″ to .035″ ga. Special high-tension models also available for brick, ingots, tin plate, etc.
- Tension is adjustable to 1200 lb. at 90 p.s.i., regular models.

To evaluate the savings you can obtain with this remarkable new tool in your own operations, call the Signode man near you or send for additional information.

First in steel strapping

SIGNODE
STEEL STRAPPING CO.
2677 North Western Avenue • Chicago 47, Illinois

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